Communication and Knowledge Sharing in an Online Community

A Case Study of a Global Oil Service Company

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Abstract

In this thesis, I have explored how an online community fosters communication and knowledge sharing in a global company. Based on empirical findings in this study, combined with theoretical aspects and previous research, I aimed to do research in one online community in a global oil service company. I was curious about how an online community, such as The Edge, can foster communication and knowledge sharing among the employees in the Company. My research questions aimed to explore what characterise the use of an online community, how knowledge sharing is facilitated and what impact cultural differences could have on the level of activity in an online forum.

Through the sociocultural approach (Clark, 1991;Vygotsky, 1978; Rommetveit, 1979; Wertsch, 1998), the thesis explores how technology as a mediating artefact promotes communication, intersubjectivity, common ground and knowledge sharing. Other theories are used, along with previous research, to illuminate the problem framing of the thesis and the research questions. The study has a qualitative approach, where I conduct a virtual ethnography of the discussion forum in The Edge, and qualitative interviews with four active members of the community. Such a triangulation of the collected data, contributes by enhancing the validity of case study findings. The data analysis is inspired by an interactional and content analysis and interpreted with an abductive approach.

The collected data from the discussion forum were first organized in an Excel document, where the approached participants were found. From the transcripts from the interviews, four categories were identified, and the collected data was analysed in light of these. The thematic categories constituted the basis for the theoretical discussion in the thesis.

1. The Edge as an Online Community
2. Learning at Work
3. Collaboration and Knowledge Sharing
4. Linguistic Challenges

The data indicates that the level of activity in the online community in the SDS network is high. The employees chose to participate to help others, keep updated on the posted topics because it is expected of them to be active. One may argue that The Edge consists of different

communities of practice, with different fields of interest. For the company, as a global business, it is an advantage that the online community allows communication asynchronously, regardless of time and place.

The Edge facilitate knowledge sharing with a workload-reducing function, It is a community that stores and obtain knowledge and support both primary and secondary work activities. Multiple learning strategies are used in the SDS network, with indications of allowing both a fix-it-level and a reflection level. Technical questions are structured within primary work tasks, and ideas and suggestions is found within secondary work.

Cultural differences consist of linguistic barriers within the community. This may cause complication in the communication and affect the level of activity. Intersubjectivity and a common ground is crucial to achieve knowledge sharing. By succeeding this on this aspect, it might be possible to transfer tacit knowledge to explicit knowledge in the company, as knowledge from the world to knowledge in the head.

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1 Introduction

Traditionally, learning has been the focus in educational settings, and learning was not expected to occur in workplace situations. Along with the focus on lifelong learning, knowledge and technology has received much attention in workplace settings in recent years, with a desire to achieve a combination of these aspects. With the development of the Internet in the mid 1990s, web-based learning and training have received a greater focus, as the activities of working life have become more knowledge intensive. Web 2.0, introduced as a contribution to the interactive capabilities of the Internet, made online social interactions possible. Online communities are increasingly becoming a part of society in the private, educational and organisational spheres. Online communities are available at any time, in any location and for anyone wanting to interact in one. This makes it possible to communicate at any time and from any place, as an addition to interpersonal communication, such as face-to-face, or through email, on the telephone and so on. What kind of impact could this have in a workplace setting? The attention concerning learning, knowledge and technology challenges the possibilities of creating and sharing knowledge through information and communication technologies (ICT). By managing information and knowledge, it is possible to achieve learning that stimulates user´s creativity and the ability to cope with and initiate changes (Hargreaves, 2004). The result of this is that learning has become an integral and essential part of adult´s work activities, and it is possible for them to acquire knowledge beyond and after the completion of formal schooling (Fischer, 2013). When integrating learning into work activities, it is essential to find ways to do so in a manner that will not affect professional attention. What kind of effect would such an online community have in a corporate organisation?

Computer Supported Cooperative Work (CSCW) is concerned with group work and individuals cooperating in a computational system; it was developed to support users and their work. Within an organisational context, ‘work’ covers a great variety of different activities in a great number of application domains, and learning should be an essential part of work. Online communication tools allow groups of people to work together even if they are not co-located, which opens up the possibilities for collaborative work within an organisational context (Ackerman, 2007; Fischer, 2013; Kear, 2010). In this thesis, I conduct an inquiry into

how such online communities can be used within an organisation to promote communication and creative cooperation.

1.1 Background for the Thesis

In October 2014, I served as an intern with an oil and service company, in relation to a subject regarding my Master´s degree studies at the University of Oslo. It is a large global company, with several different departments spread around the world, which in this thesis will be called "the Company" or just "Company". I was an intern in their University department. During my five weeks at the Company, I learned about the organisation and was introduced to their intranet. The intranet includes different types of information about the Company, its departments, and regions, along with different tools available to support the employees in their daily work. Two of the tools I discovered during my internship, ones that awakened the interest in me regarding communication and learning, were tools called The Edge and The Well. The Edge is a digital tool, that consists of different networks or groups the employees can become members of to communicate, discuss and interact with each other. The Well is a contribution to The Edge consisting of different wiki sites where the employees can search and find information. The tasks I completed during my internship were not related to these tools, so I was rather unfamiliar with their use in the Company, but I was still curious about them. In collaboration with my placement supervisor and the manager of the department that developed The Edge, I decided to write my thesis regarding the use of one of these tools, examining how it fosters communication and knowledge sharing. I was put in contact with the Knowledge Management Specialist, who works in the department that have developed the tools. He recommended that I study The Edge, which is a more mature and applied tool than The Well, and which features more interaction between its participants. The network, or community, I decided to conduct the study in is the network for Subsea Drilling Systems (SDS), a network with a lot of activity among the members. The Edge is, in this thesis, described as an 'online community' and a 'digital tool'.

1.2 Research questions

The intention of this project is to gain an in-depth understanding and insight into how a digital tool can foster and create an arena for communication and knowledge sharing in the workplace. In order to get this insight, I have chosen to start with the following problem to frame the project:

> *How does an online community foster communication and knowledge sharing in a global company?*

To explore this problem, I pose the following research questions:

1. What characterises the use of an online community?
2. How is knowledge sharing facilitated?
3. What is the impact of cultural differences on the activities in an online forum?

1.3 Conceptual Distinctions

Before I present my study of how an online community can foster communication and knowledge sharing, I want to clarify and distinguish some basic concepts that will be used in this thesis. I will start by defining communication, followed by knowledge sharing and online community.

In this thesis, the concept of *Communication* is understood as the ability to send and receive messages via some means of interpersonal communication, such as face-to-face interaction, or with the help of the Internet. When communicating, one has the ability to collaborate (i.e., in work activities), and this thesis is concerned with achieving a common ground in these activities. With a place of common ground or intersubjectivity, the communicating individuals have a common understanding about the communicated topic.

Knowledge sharing, information sharing and information flow are concepts that are often used synonymously. In this thesis, a distinction is made between them, where knowledge is

seen as something that consists of learning strategies, reflection and experience. Knowledge sharing will be the main concept of this thesis, rather than information sharing.

A online community or virtual world consists of groups of people who gather to interact with the help of the Internet, where the individuals can leave their bodies behind, thus allowing for asynchronous communication, as the involved parties do not have to share the same location or time. This thesis will mainly use the term ‘online community’, which will match the description of the tool used within the Company, The Edge.

1.4 Structure of the Thesis

This thesis begins with a brief introduction of the Company and the case for this study. This chapter introduces The Edge, as an online community and tool, and the particular network, the subsea drilling systems network, in which the inquiry is conducted. Chapter 3 contains theoretical perspectives and previous research, presenting sociocultural theory, knowledge sharing, common ground and intersubjectivity and online communities. Chapter 4 includes a more detailed description of the methodological approach and the methods I used in order to collect and analyse data. The chapter also includes some ethical considerations and a discussion of the quality of my research. Chapter 5 contains a presentation of the collected data and an analysis, including extracts from the data and my interpretations of the findings. In chapter 6, I discuss my findings in light of the theoretical perspectives and the thesis research questions. In chapter 7, I present the conclusions and key findings of this study, along with limitations and directions for further research.

2 The Company and the Case

Since it's founding in 1884, the Company has had a long history of technical innovation. Today, it is a deliverer of technology and equipment for the oilfield service industry. The Company has become global, with departments all over the world. At the global level, it consists of roughly 20,000 employees spread over 30 locations in 16 different countries.

The Company has a focus on knowledge management (KM), with an own department as of this focus. The Company's vision is to drive a culture of performance through innovative collaboration, and to unleash the unique potential of the company's` employees. The CEO of the Company said at a network leaders summit in 2013, "People are using KM to help them do their work better". This illustrates that the senior management supports this focus on KM. As it concerns the Company, KM is about getting the right information to the right people at the right time. This is important to the Company, so that the employees can achieve their individual objectives and do their jobs, thus helping the company to achieve its strategic goals.

Several different departments exist in every region where the Company is present; these employees work in the same field, but are located in their own regions. This makes collaboration across departments and geographical locations important. To foster this collaboration, the department focusing on KM has developed, among other tactics, two tools:

- The Edge
- The Well

The Edge is an online portal available to all personnel with a Company email address. It features networks and workgroups designed to help employees communicate and discuss subjects of interest. *The Well* is like an encyclopaedia for the use of all employees in the Company. In addition to these tools, the Company has its own corporate *University*, which facilitates the employees´ educational development. The Company has been migrating towards a more integrated structure, and with a corporate university as an example of its continued migration towards a cohesive corporate culture. The main language used in the Company is English, and all professional communications follow this line. All

communications through email, in meetings, and using the digital tools The Edge and The Well are obliged to be in English.

The Edge forms the foundation of this case study, as it is a communication tool and an online community available to all employees in the Company. The following section will concentrate on The Edge, its history and its functions.

2.1 The Edge

The responsible department of KM, on behalf of the Company, launched The Edge in July 2011 as a digital tool designed to bring the different networks within different departments together. The Edge is an online collaboration portal through which employees can collaborate to solve problems by sharing knowledge and lessons learned. It consists of different networks of employees, and every department or work group has a place there to gather and connect. This kind of network is comparable to communities of people who gather to discuss similar topics, questions and solve problems, among other tasks. Different networks of employees existed in the Company long before the launch of The Edge. This tool should make informal networks more formal, through online technology. Today, there are more than 60 networks in The Edge, and each focuses on achieving specific business objectives. Any person with a valid Company email account can access and become a member of any of the available networks.

Within The Edge, there are different functions, such as discussion forums, work groups, libraries and an overview of the members and the construction of the network. The Edge provides open discussions within its network, similar to forums. All members can create new posts, make statements, ask questions, inform others and so on, and all members can reply to any post or thread. The idea is that, through The Edge, employees can find meaningful answers to their questions, and that they can share useful, valuable and relevant information with colleagues. Discussions in The Edge, that produce actionable outcomes or decisions can later become valuable wiki pages in The Well.

Both The Edge and The Well are architected as a series of network-based business and technical categories managed by the same network leadership structure, ensuring the accuracy

of the posted content. A network within The Edge is a group of people who share a common interest in a specific area of knowledge or competence. Members of such a network may be willing to work and learn together over a period to develop and share that knowledge. Using their knowledge and experience, they help each other find solutions for improved business results. Every network has the same structure, with one network sponsor, who is responsible for the economics. Then, there is a network leader, who is responsible for maintaining the activity, answering questions and, in general serving as an overall leader. Furthermore, every network has a group of network coordinators. This group can consist of members who have desired to be a coordinator, or members who have been approached by the management to serve as a coordinator, with the responsibility of supporting the network leader. The network leader and the network coordinators have monthly meetings to discuss the previous month, further work, suggestions to improve the activity and so on. The network also consists of a Core Team, which is made up of influential individuals located around the globe who help to drive and add value to the network members and the business. Every employee in the Company has the opportunity to become a member of a network, even if it is not within their primary department. One can be a member of several different networks in The Edge. In addition, the Company has identified relevant Subject Matter Experts (SMEs) who may or may not be directly connected with those communities of practice.

The vision of The Edge is to connect people within the Company the same way that Facebook and LinkedIn do, in other spheres of business and private life. The Edge can be a place where employees find relevant information about a task, and the tool provides open discussions within the networks. The most common form of communication within the Company is e-mail, a one-to-one form of communication not searchable by anyone but those participating in the e-mails´ exchange. When experienced employees leave the Company, important and relevant knowledge is lost, and the Company loses this knowledge immediately. By getting important information out of people´s heads and emails and into The Edge, valuable knowledge is stored in the online portal for the good of all employees. This means knowledge may be searched for over time, despite employees having left the Company. Through this study, I hope to get insight into whether or not these visions are being achieved within the Company and to learn if the employees actually reuse the knowledge that is shared in the online communities, as it is intended.

2.1.1 The Subsea Drilling Systems Network

After receiving a recommendation from the Knowledge Management Specialist, who works in the department responsible for The Edge, I decided to concentrate on the Subsea Drilling Systems (SDS) network in The Edge. According to him, this is the network with most activity among the 60 networks, and it has an engaged network leader and network coordinators who contribute to involve all members of the network. The network consists of 566 members, six network core team members, six network coordinators, one network leader and one network sponsor. The construction of the SDS network is shown in Figure 2.1.

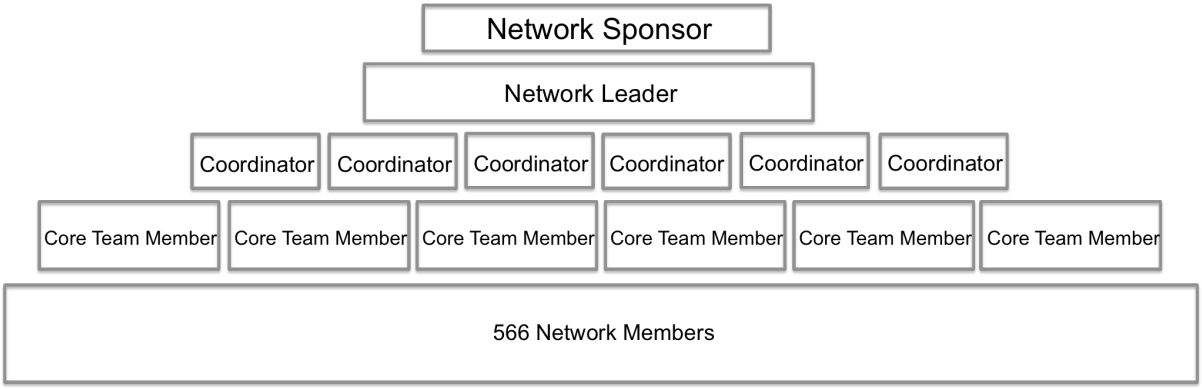

Figure 2.1: The construction of the governance in the SDS network

Further, in this thesis, to simplify the descriptions of the tool and keep it concise, I will refer to The Edge and the specifics around it as an '*Online Community*' and as a '*Digital Tool*'.

3 Theoretical Perspectives and Previous Research

The purpose of this project is to inquire about how to foster learning and knowledge sharing through a digital tool in a global company. The intention of the thesis is to combine empirical material with different theoretical perspectives to answer the project´s research questions. The perspectives presented in this chapter emerged during the study. This chapter presents the following concepts and perspectives, to establish a greater insight within the theme:

- Sociocultural theory
- Knowledge sharing
- Common ground and intersubjectivity
- Online communities

3.1 Sociocultural Theory

Lev Vygotsky, a Russian psychologist, presented a theory that perceives human cognition and learning as a social and cultural phenomenon, rather than an individual phenomenon. He explored the relationship between language and ideas, instruction and development and academic concept formation (Kozulin, 2003). This way of thinking typifies the sociocultural theory, and scholars following this approach emphasise that development first appears in social interactions, mediated by a semiotic system, mainly language, but also physical tools (Wertsch, 1998). The theory arose in the English- language literature throughout the 1970s and 1980s as a reaction against behaviourism and cognitivism. Within sociocultural theory, the learning individual is an active participant in her own learning who constructs knowledge through meaningful discussions with other peers (Bråten, 2002). Vygotsky raised the importance of sociocultural strength as the factor that shapes the situation of a child´s learning and development. The parents, teacher, peers and the environment have a crucial role to play, scaffolding the interactions that occur between a child and the environment (Kozulin, 2003).

According to the sociocultural perspective, humans are born into and developed through interaction with other humans. Our peers and mentors help us understand the world and

stimulate humans' development. Through mediation in play and other meaningful forms of interaction with others, the creation of knowledge appears (Säljö, 2001). Even though Vygotsky did all his research on children and their cognitive development, his work might still have value related to workplace learning.

The term *tool* has a distinct meaning in the sociocultural perspective. Both the intellectual and physical resources that humans have access to help us understand and act in the world. Over a very long time, humans have developed sociocultural tools to cope with everyday life. How humans learn is a question of how we appropriate resources so that we can think and perform practically; these approaches become a part of our culture and surroundings. Humans are able to learn and experience with the help of mediating artefacts (Säljö, 2001). Vygotsky (1978) made a distinct contribution with mediating artefacts, noting that they help us to understand the meaning of language, and language is a mediating tool in the learning process. The thesis delves into the mediation and artefacts found in online communities.

3.1.1 Mediating Artefacts

The term 'mediation' comes from the German word *Vermittlund* and means to convey or to communicate. Vygotsky posed the notion that all human action can be seen in context using historical and culturally developed tools, or artefacts. We manage or mediate the world through artefacts, physical or linguistic, integrated into our social practices. Artefacts can be defined as a sort of object created and developed by humans to make it easier to handle our practical, everyday tasks (Vygotsky, 1978; Wertsch, 1998). To understand learning as a part of social practice, it is important to understand how individuals think in situations where they act in social practices using artefacts (Säljö, 2001).

It is within a culture that the creation of artefacts occurs. We live in a world with human-created tools and objects that are physical and linguistic. Physical tools are often defined as objects created by humans, such as books, computers, buildings and so on. Linguistic artefacts, also called intellectual artefacts or ideas, are shaped through language, communication and the content of texts. Linguistic artefacts can be either oral or written (Säljö, 2006). Through language, we have a unique opportunity to communicate and share experiences with others. Learning is not determined by our instincts or limited to what we have found out through personal, physical contact with the world. This is why we can say that

human language is a unique component for creating and communicating knowledge (Säljö, 2001). Artefacts do not appear naturally in the world, they occur through human thinking, intervention and from activity. Artefacts can give different messages to different people, based on the time from which they originate and depending on the significance given to them at that time (Novak, 2010). Closely linked to sociocultural theory are information and communication technology and digital tools as mediating artefacts. This substantiates the choice of this research approach.

3.1.2 Scaffolding

Wood, Bruner and Ross introduced the concept of scaffolding in 1976 (Pea, 2004) as a contribution to Vygotsky´s Zone of Proximal Development (ZPD). The ZPD is central in Vygotsky´s theory, and is defined as "the distance between a child´s actual developmental level as determined by independent problem solving, and the higher level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, as cited in Wertsch, 1985, pp. 67-68). This development occurs among individuals of all ages, when a more competent individual contributes to the knowledge development of less competent individuals. Communication exists as a process by which the vocabulary adapts to the person when learning and develops alongside her higher cultural levels (Kozulin, 2003; Wertsch, 1985).

Scaffolding is defined as "the zone of activity in which a person can produce with assistance what they cannot produce alone" (Pea, 2004, p. 426). It is a procedure where the learner gets support while learning something new, whereas the support fades away when the learner manages on his or her own. Scaffolding can occur with software features, human assistance or other material support (Pea, 2004). Such support can come from a more knowledgeable person, an expert, digital tools or other features within physical or linguistic tools.

There are different ways to scaffold, and it is common to make a distinction between two of them, targeted intervention and ad hoc scaffolding (Daradoumis, Caballé, Juan & Xhafa, 2011; Pritchard & Wollard, 2010). Planned intervention is the type of scaffolding that exists within educational settings and is related to instructors in classrooms. In these settings, the teacher has a plan for the learners, along with determined learning goals. Ad hoc, or situational, scaffolding occurs only if the expert and the learner are at the same place at the

same time; it is not planned scaffolding (Pritchard & Wollard, 2010). The concept of scaffolding is the same within both settings, but the occurrence of the scaffolding may be different. Ad hoc scaffolding occurs mainly within workplace learning, when questions need answers, and information seeking is necessary and connected with daily problem solving. This appears in situations where groups of people might have a different understanding of a situation, and a sense of intersubjectivity may become an important factor in the collaboration.

3.2 Knowledge Sharing

Within the sociocultural approach, Vygotsky defined knowledge as information rather than knowledge as a concept formation (Kozulin, 2003). Knowledge as a concept belongs within philosophy, and epistemology is the origin of knowledge. Knowledge is not only information, it is also concerned with learning strategies and methods for conducting inquiries; it is combined with experience, context, interpretation and reflection. Thinking, feeling and acting are important in meaningful learning and occur in human learning and in new knowledge creation. Knowledge is the definition of what we know and how we know it can be related to other types of knowledge that exist within us (Easterby-Smith & Lyles, 2003; Novak, 2010). Different approaches to knowledge exist within sociocultural theory, such as knowledge building, knowledge management and knowledge sharing. Knowledge sharing is the most suitable approach for this study.

Ludvigsen and Nerland (2013) describe knowledge sharing as something that "involves creative actions and construction of knowledge to achieve solutions and make existing knowledge useful in solving new problems" (p. 175). In a knowledge sharing activity, participants come from different positions in the process; possible actions are regulated by established knowledge and institutional histories. Symmetry between participants is not necessarily needed (Ludvigsen & Nerland, 2013).

In the knowledge intensive societies of our time, both the construction and sharing of knowledge are important for producing products and services (Ludvigsen & Nerland, 2013). Ludvigsen and Nerland did a study on the impact of creative acts sought to find solutions and build knowledge using a sociocultural approach. They emphasise that knowledge sharing can be analysed through different layers of action, activity and the organisation of social,

cognitive and cultural systems. These layers are referred to as socio-, micro- and ontogenesis (Valsiner & Van Der Veer, as cited in Ludvigsen & Nerland, 2013).

Sociogenesis is concerned with the interaction between persons as they participate in social and cultural systems. Microgenesis refers to how participants interact during activities and the kinds of resources they choose to take in in order to present or perform. Individuals´ knowledge may be such a resource. Through such communication between individuals´, ontogenesis explains the individual development of the participants and what they bring to activities in the workplace. Working with standards and procedures may involve creativity and generate changes when there is intersection between these three layers (Ludvigsen & Nerland, 2013).

Knowledge exists in different forms and can be explained in several different ways. Nonaka and Takeuchi (1995) distinguish between knowledge and information, where knowledge is one´s beliefs and commitments and is about action, whereas information is, essentially, records or something written. Knowledge and information are context-specific and relational, whereas knowledge alone is much more complex. Nonaka and Takeuchi (1995) build on the earlier work of Polyani, who examined tacit and explicit knowledge. Tacit knowledge is subjective, and explicit knowledge is objective. Tacit and subjective knowledge is not verbal; it exists in our abilities, memory and intuition. It has personal qualities and is hard to formalise and communicate further. Explicit and objective knowledge exists in linguistic form and is transferable. It is found in documents, databases and manuals (Nonaka & Takeuchi, 1995; Novak, 2010). Donald Norman (2001) distinguishes between knowledge in the world and knowledge in the head, and describes declarative and procedural knowledge. Declarative knowledge is knowledge or awareness of an object, event or idea. This kind of knowledge is a knowing that form, whereas procedural knowledge is more of a knowing how. Declarative knowledge is necessary for the construction of procedural knowledge (Novak, 2010; Scardamalia & Bereiter, 2005). Knowledge is easily available in the world; as the definition of declarative knowledge says, it is easy to write down and to teach. Procedural knowledge is difficult to describe or to teach, best learned through practice and compared to knowledge in the head. Knowledge in the world might not be so efficient in everyday use, as it is time consuming to search for and interpret external information, whereas knowledge in the head has been internalised, automated and is more efficient (Norman, 2001).

3.3 Common Ground and Intersubjectivity

Herbert Clark (1991) and Ragnar Rommetveit (1979) are two scholars who have been important contributors to the research fields of language and verbal communication. A model of conversation gave life to a concept of common ground (Clark & Brennan, 1991), which can also explained as mutual belief, intersubjectivity, shared conception or shared knowledge. Rommetveit (1979) saw the social context as important when humans communicate with each other. In conversations with several persons, it is essential to have and show mutual understanding and the opportunity to discuss one´s thoughts and opinions. Intersubjectivity is a concept that conceptualises the psychological relationship between humans in conversation to establish a common understanding. This common ground, or intersubjectivity, is important within collaborative learning, where the aim of communication is to exceed the private worlds of the participants (Clark & Brennan, 1991; Rommetveit, 1979). Within scaffolding (Pea, 2004), the definition of interaction is a type of communication where both parts are valuable contributors. The learning person is a central factor in the collaboration with the more competent person, where both the language and its level adapts and develops as learning occurs (Wertsch, 1985). The concepts of common ground and intersubjectivity are necessary for this to happen (Clark, 1991; Rommetveit, 1979).

There are several different ways to communicate, just as there are several different communication mediums. There is a distinction between one- and two-way personal media, where one-way can consist of media such as a book, newspaper or television, and two-way can be face-to-face, through telephone conversations, e-mail, videoconferences and so on. Common ground can change based on the medium used, and it is important to be aware of the communicated content and which form of media is used (Clark & Brennan, 1991).

Communication forms between several persons may vary if they are physically located in a meeting, versus if they are participating in the meeting through a videoconference. Clark and Brennan (1991) emphasise the importance of grounding in communication. We have to assure others that the understanding of a sent message is as intended, and recognise that communication is a collective activity. It requires the coordinated action of all the participants. Common ground, or intersubjectivity, should be present when we work to share knowledge. The communicating person must be aware of what the other person knows, so

that the person receiving the content understands the message. In an online community, where the participants might be unknown, how is this possible?

3.4 Online Communities

The term 'information and communication technologies' (ICT) refers to different tools used to promote connections between learners and between a learning community and its learning resources (Dirckinck-Holmfeld, Jones & Lindström, 2009). The first-generation web, or Web 1.0 was an educational and communication resource used to gather information additional to books. It presented tools much as overhead projectors or other linguistic artefacts do. Web 1.0 only gave small opportunities for users to create and share, and it was, primarily, a resource used to read and obtain information (Greenhow, Robelia & Hughes, 2009). Web 1.0 was the definition of a read-only tool, whereas Web 2.0 is a read-and-write tool. Web 2.0 includes social networks, collaborative knowledge development and user-generated content. Users are incorporated, and they are encouraged to interact and participate (Greenhow et al., 2009). There are several services, or user processes, that demonstrate that the foundations of the Web 2.0 concept, and many of them are used to a certain extent in education. These include blogs, wikis, multimedia sharing services, content syndication, podcasting and content tagging services (Andersen, 2007).

Computer-Mediated Communication (CMC) is a term used to describe how it is possible to communicate through the Internet and computers. There are several ways to carry out CMC, such as through virtual worlds, online communities and other approaches (Rheingold, 1993). CMC can consist of groups of people who can work and communicate, even if they are not located in the same place. This enables the possibility for collaborative work within an organisational context (Kear, 2010).

'Virtual community' is a term first used by Howard Rheingold (1993), who defined it as "social aggregations that emerge from the Internet when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace" (p. 6). People interacting in virtual communities behave similarly to people in real life, but they leave their bodies behind. The words they use appear on monitors, instead of being spoken, but people still engage in intellectual discussions, exchange knowledge, share emotional support, gossip, brainstorm ideas and find friends and

lose them, to mention only a few activities. Since the body is left behind, kisses cannot be exchanged, nor can punches be thrown, but a lot can happen within those boundaries (Rheingold, 1993).

Robert Johansen (1988) presents a time-place matrix to describe possibilities within synchronous and asynchronous communication. His matrix describes and identifies four classes of cooperative work situations along the dimensions of time and place, with a distinction made between synchronous and asynchronous communication (Figure 3.1).

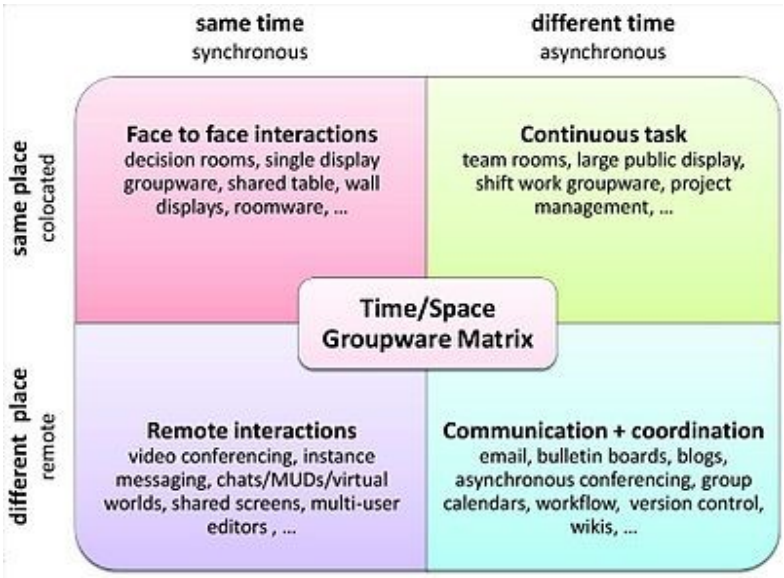

Figure 3.1: Time and Place Matrix within Computer Supported Cooperative Work (Johansen, 1988).

Synchronous communication takes place at the same time and can occur at both the same and in different places. 'Same time – same place' refers to face-to-face interactions, and 'same time – different place' can be used to describe video conferencing or chats. This type of communication requires all participants to be online at the same time. Asynchronous communication occurs at different times, and can be both same and different place. 'Different time – same place' can refer to continuous tasks in collaborative rooms, such as via Google Docs, and 'different time – different place' describes communication plus coordination. This can be achieved via email, blogs, group calendars and so on, with the possibility of communicating even though the other person is not online. This type of communication has no requirements regarding being logged on at the same time (Johansen, 1988). Asynchronous communication tools, such as discussion forums, are beneficial regarding organisational contexts. They open up the possibilities for communicating when it is convenient, even if the

participants are in different time zones, and there is a permanent record of the communication (Kear, 2010).

Both synchronous and asynchronous communication exists within the Company. In the different offices and departments, meetings are arranged for the same place and at the same time, whereas the Company´s WebEx conference system makes it possible to hold meetings at the same time but in different places. This makes it possible to conduct meetings across global locations and to involve larger groups of employees in the meetings and discussions. Shared documents and shared drives make it possible for employees to cooperate at different times but in the same place. It is within the fourth column that the online community, The Edge, is situated. The communication in this community does not depend on synchronous activity, since members are able to post at any time, from any time zone, and they can be located in different places around the world while retaining the possibility of communicating across the Company. Johansen (1988) presents this matrix within the research field called Computer Supported Cooperative Work (CSCW).

3.4.1 Technology-enhanced Workplace Learning

The focus within a Computer Supported Cooperative Work (CSCW) is on individuals working in groups in which applications include desktop conferencing and videoconferencing systems, collaborative authorship functions, electronic mail, electronic meeting rooms or group support systems. This is a research field that looks at how groups work and seeks to discover how technology, especially computers, can help them improve their work. It is a place for system builders to share experience and notify others of technical possibilities and constraints. The research field is oriented around those who are refining their skills as experts in their field (Grudin, 1994; Stahl, 2013b).

CSCW has a focus against teamwork, learning, problem solving, knowledge and task completion. Instead, the field is oriented around smaller groups, and the interactions occur online and through technology. The groups can consist of people from all around the world; the culture or location does not have to be shared. These groups can be called virtual groups (Fischer, 2013; Stahl, Koschmann & Suthers, 2006). CSCW involves employees through a new form of social interaction in which they are brought together through technology (Stahl, 2013b).

The design of a collaborative software system is important, and the focus is on being useful to everyone in a group or organisation. Users adapting a software system for their own purposes, finding new features, customising old features and finding new ways to use the system, may lead to effective ways of reaching a goal. When the routines and artefacts become useful in someone´s environment, they become resources to that person (Ackerman, 2007).

Mørch and Skaanes (2010) found a distinction between primary and secondary work. All that is within an employees work description and job scope can be described as their primary work, whereas secondary work refers to learning and information retrieval. They found that multiple learning strategies might help the gaps between primary and secondary work, so that workers are able to achieve learning situations during their daily work. Fischer (2013) presents three learning strategies, in addition to strengths and weaknesses related to workplace learning. These learning strategies, seen in light of the findings by Mørch and Skaanes (2010), might help to close these gaps. By allowing different learning strategies within a company, and bringing educational and working situations together, employees might achieve learning on a higher level, which is beneficial for them and their work situations. Table 3.1 presents the three levels of strategies, where a ‘fix it’ level allows the problem to be solved right away, a ‘reflect’ level gives the opportunity to reflect in the right context and a ‘tutorial’ level represents a domain to be explored through systematic and specific tutoring.

Table 3.1

Multiple Learning Strategies (Fischer, 2013)

Level	Description	Strengths	Weaknesses
Fix-It level	Fixes the problem by giving performance support without detailed understanding	Keeps focus on the task; learning does not delay work	Creates little understanding
Reflect level	Explores argumentative contexts for reflection ('reflection-in-action')	Understanding of specific issues	Piecemeal learning of (disconnected) issues
Tutorial level	Provides contextualised tutoring (not lecturing on unrelated issues)	Systematic presentation of a coherent body of knowledge	Substantial time requirements

Open collaboration societies, such a wikis, can be optimal places for learning, given their high participation rates (Halfaker, Keyes & Taraborelli, 2013). Research has found that different wiki societies have constructed good information resources with the help of small groups of active volunteer participants. Halfaker et al. (2013) conducted a research project with the intention of understanding the effectiveness of a tool supposed to give feedback on articles, to find out how readers engage with Wikipedia. They evaluated the pros and cons to expand the opportunity for participation and to encourage readers to edit a page on Wikipedia. Readers received invitations to edit pages. They found that new readers were not productive the first week after receiving the invitation, because it took a while for them to understand the site´s rules and behaviours; they also found that it takes longer to edit a wiki page than it does to leave a simple comment. Their analysis implies that the tools being used must have the possibility to decrease the costs of unproductive contributions by sending an invitation to edit. It seems likely that an invitation could provide usefulness to Wikipedia, despite the fact that invitations like this can lead to a greater number of unproductive edits. These findings are relevant to my study, which questions if employees are encouraged to be active contributors and members in their network, and which examines how this participation is executed.

3.4.2 Two Types of Community

Jean Lave and Etienne Wenger first presented the notion of a community of practice (CoP) in 1991, as a theory of learning and later as a part of the field of Knowledge Management (Wenger, 1999). It is a social theory in which learning happens via social participation and engagement. Wenger (1999) emphasises that all individuals belong to different communities

of practice. Such a community can exist at home, at work, at school, in our hobbies and in other places where humans socialise or interact. A CoP is an ad hoc or situational community that only occurs on the individual's premises, and which the members join voluntarily. The different CoPs we interact in are informal; they do not have a name or a requirement for membership. They exist in our daily lives, we are familiar with them and the concept is neither new nor old (Wenger, 1999). A CoP is a group of individuals who have a shared problem or passion for something. They interact together to achieve an in-depth understanding, more knowledge and to gain expertise in that area. The community consists of people who do not necessarily work together on a daily basis, rather they meet with the same agenda and they see the value of interacting on a voluntary basis (Wenger, McDermott & Snyder, 2002). In an organisation, a CoP may consist of workers who organise their lives with colleagues to get the job done. Practices might occur between employees, employees and clients or as a day-to-day outcome, according to different needs (Wenger, 1999). CoP members are voluntary participants who seek and share knowledge, and the participants' work is coordinated to solve problems systematically (Wenger, as cited in Fischer, 2013). A community of practice may occur within a whole organisation, within working groups, or in online and virtual worlds. A CoP is something relatively constant, where the members manage simple but relevant tasks and gradually accomplish more complex and central assignments. Humans participate in several CoPs, and most people can probably distinguish between those in which they are core members and the few in which they have a more peripheral membership (Wenger, 1999). A new employee in an organisation is a newcomer to a CoP. When the newcomer is able to perform the expected tasks, he or she becomes a veteran in the community and is seen as an experienced individual (Mørch, Andersen, Fugelli, Ponti & Lahn, 2013).

A Community of Interest (CoI) is a term defined by a group´s collective concern with the solution of a problem. CoIs may occur when individuals from different communities of practice gather around a common commitment or interest to solve specific and complex problems (Fischer, 2013). This type of community is often more temporary than a CoP, and the participants might not intend to become long-term members of the community. They may only have an urge to find the answer to a question or the solution to a technical problem. Members of this kind of community can meet across communities of practice, and CoIs are typically more complex and diverse than CoPs (Fischer, 2013; Mørch et al., 2013).

Mørch et al. (2013) conducted a study in which they looked at newcomers in three open Internet communities. They wanted to study which activities these individuals participated in, and what kind of opportunities or barriers existed regarding becoming a participating member in a community. They found tendencies in CoIs, where newcomers sought answers or technical solutions to local problems, to get help with formulating questions or to be able to participate in tasks. They found a small indication for a direct relationship or contact between newcomers and experts in the community. They found three types of participation in these communities: 1) lurkers, individuals who neither post nor write anything; these are inactive participants; 2) those who write successful posts in relation to problems experienced and; 3) core members who contributes actively (Mørch et al., 2013). Lurkers in online communities may be invisible; they may not reply to any of the posts made by other active participants in the group. Lurkers are important, from in a community-based perspective, only if they eventually become active in the group (Hine, 2000).

In my case, it will be interesting to explore if there will be tendencies toward CoP or CoI characteristics in the network where I am conducting my study. In addition, it will be interesting to see if there are members who participate in different ways, and to search for the reasons for these differences. Why do some people participate actively, while others only read posts occasionally? In the understanding of the Internet, the role of lurkers has been identified as a gap, in which their invisibility makes it hard for researchers to get a sense of what they read, how often, when they read and so on (Hine, 2000). Some online communities or virtual networks, such as Facebook, have a feature that can show how many of the members in the community have read a discussion or post. This might be a feature to add, as it would make it easier for ethnographers to discern the presence of possible lurkers.

In a study conducted to find out what it takes to make a newcomer to become familiar within an online community, Hsieh, Hou and Chen (2013) found, among others, that new and long-time members are both more likely to help newcomers than those who just are simply members. Users who strongly identify with the community and socialise through it are more likely to help newcomers. These findings come from a study in a social news-sharing community, called Reddit. The relevance to my project is in the interest of examining how long-time members behave in regards to new employees, and how the newcomers become a part of the online community.

3.4.3 Online Knowledge Sharing

Studies of knowledge-intensive firms have identified mutuality, trust and recognition as important factors for knowledge sharing. Knowledge sharing within an organisation can be found in two different contexts: interpersonal and through a database (Bordia, Irmer & Abusah, 2006). The interpersonal context refers to face-to-face communication, whereas a database context can occur when sharing through a discussion forum or a wiki. There are elements that can prevent knowledge sharing from happening, such as a fear of one´s work being critiqued, or being revealed delivering something that is wrong. Technologies such as databases or intranet sites, which are designed to facilitate the progress of knowledge sharing among employees, are more and more common for organisations to invest in. Bordia et al. (2006) have tried to find the difference between sharing knowledge interpersonally and via databases through the role of evaluation apprehension and perceived benefits. They found that apprehension among the employees increases when sharing through collective database-related technologies. In a database context, the knowledge is accessible to a larger number of people, and the record is permanent. They found that evaluation apprehension was negatively associated with knowledge sharing intentions in both contexts, while perceived benefits were only positively associated with knowledge sharing intentions in the database context. Aspects that may have an impact on knowledge sharing in organisations can be ownership of information, perceived benefits, evaluation apprehension and the trust in co-workers and the organisation. This might affect the implementation of knowledge sharing initiatives like a digital tool designed to increase the frequency of knowledge sharing (Bordia et al., 2006). The age of Bordia and colleagues´ study makes it hard to generalise the findings directly to organisations today. As the Internet has taken on a greater role in today´s society, levels of evaluation apprehension might have decreased, along with the fear of sharing something in a online community. Through my study, it might be possible to conduct an inquiry with these results in mind, to examine if their findings are still valid. An interesting factor in Bordia et al.´s study is that they found that knowledge sharing in the database context is positively associated with perceived benefits, but negatively associated regarding evaluation apprehension. This could mean that employees prefer to look for shared knowledge in a database, but they are reluctant to share their own knowledge in such a context.

Wulff and Suomi (2003) present an analysis in which knowledge sharing is correlated positively with business success. They found that it is important to create a platform for

mutual information communication, so that participants are able to discuss all of their questions. Knowledge sharing can occur with tools and strategies for information management, and with support from the top management and the company as a whole. Creating an active information culture in the firm will give benefits regarding the creation of a common language among the employees, which can improve the efficiency of the work of the company (Wulff & Suomi, 2003).

Hermanrud (2009) did a comparative study of how employees combine different uses of ICT when they engage in professional knowledge sharing networks. They collected their data by interviewing members of professional networks in two publicly traded organisations in Norway, with a focus on formal and emergent professional networks. They found, among others, that knowledge of practice, outlined by Lave and Wenger (1991), and network of practice, discussed by Duguid (2005), could describe these professional networks. Knowledge sharing existed, but the employees also did things together, and this was where the formalisation of guidelines and policies occurred. The combination of ICT, such as being able to talk, read and write at the same time, was found to be important for knowledge sharing in the public organisations under study. This combination could be built into the actual tools used by employees, such as the possibility for several employees to work on the same document at the same time, in groups within a mail loop, via phone meetings and so on (Hermanrud, 2009). This study would be relevant for my study, if I had chosen to do my study on the multiple ICT tools the Company is using. In addition to The Edge, The Well and the courses The University provides, they also use Outlook email, WebEx conference calls, and their intranet to both share and find knowledge, and to communicate across the different locations of the departments all over the world. The focus of this study will be The Edge as a facilitator for knowledge sharing and communication, but it might be impossible to distinguish the other ICT tools, that are also in use by the employees.

Some literature has emphasises that ICT does not support organisational learning, but a study conducted by Hjelmervik and Wang (2007) demonstrated that in some cases, a knowledge management system (KMS) does support organisational learning. They suggest a structure regarding the KMS, developed and implemented by the management, which can make the KMS appropriate for a company to achieve organisational learning goals. Their case illustrates that knowledge represented through a KMS, can have a successful application when the management helps to get it applied by the organisation (Hjelmervik & Wang, 2007).

4 Research Methods

It is important to know where one is going, before one chooses how to get there. Kvale and Brinkmann (2009) refer to the method as "the way to reach your goal" (p. 19). The thesis research questions and framing are often the aspects that affect which method to choose in a research project. The purpose of this thesis is to answer the question "How does an online community foster communication and knowledge sharing in a global company?" To be able to answer this question, I had to make the right decisions regarding the choice of methods and how to analyse the data gathered. I am seeking insight into how an online community, as a tool, is used among the employees of the Company, and whether it fosters communication and knowledge sharing.

This chapter opens with a presentation of the difference between qualitative and quantitative research, followed by a presentation of case a study as an empirical inquiry. Then, it follows virtual ethnography and qualitative interviews and the approach to data classification and analysis. Towards the end of this chapter, I present some ethical considerations relevant to my research, with a discussion of the quality of the research in terms of its validity and reliability.

4.1 Choice of Method

There are at least two ways to approach a research study, choosing between a qualitative and a quantitative method. There are even ways of mixing these approaches, referred to as 'mixed methods research' (Kvale & Brinkman, 2009). Through the years, there have been many discussions regarding which of the methods and approaches produces the best results, but the choice of method should always depend on the research project and what one wants to achieve (Hellevik, 2009). Available resources might also be a factor for choosing the best method for a project, because both time and money can put limits on what it is possible to do. For example, an observational study of people's households might give a large amount of data both qualitative and quantitative in nature, but it would be time consuming and demanding to make a project of that kind generalizable. One needs to consider whether it would be best to use a questionnaire to facilitate a widespread inquiry, or whether the choice should be to do

an observational study to get an in-depth and detailed understanding of the topic at hand (Johannessen, Tufte & Christoffersen, 2010).

Quantitative researchers study populations or samples of populations, whereas qualitative researchers study specific cases. Using a qualitative approach, the researcher becomes personally involved with the research participants, to the point of sharing perspectives and assuming a caring attitude. With a quantitative approach, the researcher takes an objective, detached stance toward the research participants and their settings. Despite distinct differences between the two approaches, it is common to alternate between them (Gall, Gall, & Borg, 2007). For example, one can use a qualitative approach during an exploratory phase, where the phenomena being studied have little familiarity, and then move further on to a quantitative approach when the definitions are developed and can be put into a hypothesis to be tested (Hellevik, 2009). This is referred to as a mixed methods approach (Kvale & Brinkman, 2009), but it is beyond the scope of this project; instead, a qualitative approach has been chosen.

According to Johannessen et al. (2010, p. 32), a "qualitative method is particularly appropriate if we are going to examine something we are not so familiar with, and when we want to understand the phenomena we examine more thoroughly". Data in qualitative methods can consist of texts, sounds and images, where the focus is on interpreting the data, whereas quantitative methods relate to the data by categorising the phenomena, focusing on counting and on the prevalence of the phenomena (Johannessen et al., 2010). Collected quantitative data consists of comparable information about a larger number of units, in which the information is presented in the form of numbers and where the researcher can conduct a statistical analysis of patterns in those numbers. Quantitative research combines many units and fewer variables, with a systematic presentation and registration (Hellevik, 2009).

If the purpose of the project is to examine whether the employees in a firm are using a tool, how often they use it and when, it would be correct to choose a quantitative method. If one is more interested in understanding why employees are using a tool, what the employees achieve by using it and in which way or ways the tool affects their daily work, it would be correct to choose a qualitative method (Johannessen et al., 2010).

The reason for choosing a qualitative method for the present study is that I am seeking in-depth insight into work-related activities of a group of employees in a company and to learn about the employees´ personal experiences and interactions. I decided to take a closer look at the Company's online community and a tool referred to as The Edge. When I gained access to the community, I had to choose a method for collecting data, and I decided to use virtual ethnography (Hine, 2000). With virtual ethnography, one needs to take into account aspects of conventional ethnography and the features of technology supporting an online community. In order to systematise the collected material from the discussion forum, I was inspired by the quantitative approach. As a supplement to the virtual ethnography approach, I decided to conduct qualitative interviews with selected participants in the community, in order to examine their experiences with and attitudes toward The Edge.

4.1.1 Qualitative approach

There are several ways to collect qualitative data, and it can arise from different types of sources. Data can come from the researcher's notes about observations or interviews; from audio or visual records; or from public documents, books, letters and so on. One can distinguish between two ways of collecting qualitative data, observation and interviews. With observation, the data builds on the researcher's perceptions of actions and interactions in concrete situations. With interviews, the focus is on what the interviewees express to the researcher. It is important to notice that one can also use observation and interviews in a quantitative approach. If the data is analysed through countable categories (e.g., speech acts), it is recognised as quantitative data (Johannessen et al., 2010).

4.1.2 Case study

According to Yin (2003, p. 13) "a case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and context are not clearly evident". My project is an in-depth, single-case study in which I aim to answer my research questions, emphasising 'how' and 'why' questions. When 'how' or 'why' questions are sought, and the focus lies on phenomena within some real-life context, a case study might be preferred. Case studies are a form of qualitative research where the focus lies on each case as a whole unit, but multiple methods can also be used to complement case study research (Johnson & Christensen, 2012; Yin, 2003).

The procedure regarding a case study is to direct the analysis against one or more well-defined units. These can be individuals, groups or organisations. When the case study deals with a unit of a larger size, such as an organisation, it is common to direct the analysis towards the organisation as a whole and not towards the individuals involved in the study, otherwise one may want to choose a quantitative approach. A case study is an intensive inquiry into a few units for analysis (Thagaard, 2013).

4.2 Research Design and Data Collection Techniques

4.2.1 Virtual Ethnography

Christine Hine introduced virtual ethnography in 2000, and the book focuses on "the practices through which the technology is used and understood in everyday settings" (Hine 2000, p. 4). Ethnography is a scientific method used to describe and compare different cultures and societies, often done through field studies in the Internet. Ethnography literally means "writing about people" and is described as being synonymous with participant observation and fieldwork, in which the researcher collects data primarily outside of his or her own office or through conversations or interviews with the persons of interest. 'Participant observation' actually means participating in what one studies, not just being there and asking about it—learning what it is like and feeling it in one's own body. The researcher is interested in describing the culture of a group of people and learning what it is like to be a member of that group (Delamont, 2004; Johnson & Christensen, 2012). Ethnography of the Internet (i.e., virtual ethnography) offers scholars the opportunity to investigate how technology for online communities is experienced in use and how it is understood. Such ethnography can explore the complex links between requirements set for new technologies in different areas (Hine, 2000).

According to Hine (2000), the Internet can be understood in two different ways: as a culture in its own right and as a cultural artefact. The Internet is available from the researcher's desk and office at any time, therefore we can understand it as a type of culture. The researcher can be a visible and active participant, or just an observer. Virtual communities and societies, in which people can connect, interact and find different communities of interest, exist on the Internet. Archiving allows the possibility of searching through discussions and interactions

long after they actually happened, which makes it possible to conduct research on phenomena that have occurred. As a cultural artefact, the description of the Internet refers to an object with different cultural meanings in different contexts. The use of the Internet in the Western part of the world might be different from its use in other parts of the world, where access is less prevalent (Hine, 2000). A question to ask is also, whether the big difference is in the different types of user groups in the Western world. When Hine (2000) described this distinction, the Internet was much smaller than it is today. The description of the Internet then was one corresponding to a minority technology, whereas it today might be described as the main technology we use for cooperation.

When a researcher decides to conduct her research over the Internet, the researcher can choose to sit in her office or be at home while carrying out the fieldwork. By using a laptop, she can visit different online cultures, observe online behaviours and interview people who are located in other parts of the world. Some critics of virtual ethnography consider this poor fieldwork, but proponents note it is easier to examine new and unexplored behaviours in this way, since the researcher is not dependent on buying expensive airline tickets to travel to the field physically (Markham, 2004).

One can do research of the Internet, and research using the Internet as a tool, which can give the project two different properties. A computer can provide several different means of communication, including the possibility of sending information from one computer to another (Hine, 2000). Different tools on the Internet make it possible to communicate synchronously or asynchronously. Synchronous communication can be in a chat forum or via an interaction in Second Life, where both parties need to be online at the same time to make the communication work. A discussion forum can be an example where one can find asynchronous communication, as different people can respond at any time when they are available. Such communication can consist of private messages between a few individuals or a discussion between large groups of people in a public forum. With Internet research, the researcher can chose to make observations, participate and/or conduct interviews in synchronous or asynchronous times (Hine, 2000; Markham, 2004).

According to my research questions, I believe virtual ethnography is a good strategy for answering them. I will get the opportunity to conduct an inquiry on the functions of the online community and the employees´ activities regarding their daily work. I will also have the

opportunity to look at the activity regarding discussions in the community involving participants from several departments in different geographic locations. By being able to collect data from the interviews, and by conducting the interviews online, I will be able to realise the in-depth inquiry I am seeking, and answer the research questions.

4.2.2 Data Collection in an Online Community

It is a large and global Company with offices and departments in the United States, Europe, Africa and Asia, which makes it important to use the Internet to overcome geographical distances. As a consequence of collaboration across the world, cultural differences might be a factor I need to take into account during the study. In the Company´s online community, The Edge, many different networks are available, both local and global. The online network I decided to focus on in this project is a global network and early on I had an urge to choose participants in different geographical locations. By choosing virtual ethnography, I had the opportunity to choose participants for the interviews from all over the world and to examine whether cultural differences and challenges are an actual concern regarding this online community and the interactions found in it.

There are several data collection methods available in virtual ethnography. One approach calls for the ethnographer to participate in a virtual world, like Second Life, as an active member or as an observer (Hine, 2000). Programs like Camtasia (Camtasia, 2015) provide the means for automated screen recording and video editing. Through this virtual world, the researcher can also interact with the participants with the help of voice (with headphones) and chat (textual communication) functions. Text-based data can also be captured by saving and printing the texts as documents, or by printing one´s screen. In accordance with ethical standards, the researcher should apply ethnographical sensitivity to the collected data, changing user names, making the participants unrecognisable and so on. This might not be enough, however; it might also be necessary to refrain from using quotations, without losing the means of the discourse. This is not a total solution, but a situational compromise (Hine, 2000). When collecting the data from The Edge, I captured the texts via screen shots and then gathered them into one document. I used an Excel document to organise all information and to create an overview of the network´s activity.

Table 4.1

Screen screen of an Excel document

	A	B	C	D	E
1	Posted date	Replies	Replied date	Time	Topic
2	Side 2				
3	08.08.14	9			Engineering DRM Checklist - 2 questions
4			13.08.14	03:39	*
5			13.08.14	07:10	**
6			13.08.14	07:20	***
7			13.08.14	06:40	*
8			18.08.14	15:17	**
9			14.08.14	05:29	*
10			14.08.14	07:41	**
11			14.08.14	15:40	***
12			27.08.14	11:21	****
13	12.08.14	2			Drilling Rigless Tophole
14			13.08.14	08:15	*
15			14.08.14	03:24	**
16	15.08.14	2			3 Pipe Plugs installed in Bottom of Lead Impression Tool
17			15.08.14	17:41	*
18			18.08.14	05:01	

Table 4.1 is a screen shot showing the Excel document I used to organise all discussion posts. Posts are sorted out by date, number of replies per post, the date of the reply, the topic and so on.

4.2.3 Qualitative Interviews

The intention of a qualitative interview is to get an understanding of the world from the interviewee´s perspective. It is an interaction between the interviewer and the interviewee where knowledge is created. Through conversation, different points of view are shared, about a topic in which they both have an interest (Kvale & Brinkmann, 2009; Raply, 2004). In a qualitative interview, the researcher seeks to understand the aspects of the interviewee´s life from his or hers perspective. It is a professional conversation, but the interviewer would want the interviewee to feel as comfortable as possible (Kvale & Brinkmann, 2009). Managing and conducting good and rich interviews is a professional skill, and skilled interviewers are able to build trust with the interviewee, obtaining information that the person would not reveal by any other data-collection method. The interviewer must have a good understanding of the topic and be able to listen and follow up on a respondent´s answer to obtain more information and clarify vague statements (Gall et al., 2007). The researcher must also know what is important in the work culture, in order to understand what is important to ask about.

There are several techniques possible when conducting interviews, including face-to-face interviews, telephone interviews, chat application-based interviews and e-mail interviews. The most common technique is face-to-face interviews, but interviewing by telephone or using the Internet to carry out the interviews has become more common in recent years (Opdenakker, 2006). The interviews can be done face-to-face if the researcher has the option of travelling to the location of the interviewees, or they can be conducted online and in virtual settings. With these different opportunities, it is possible to conduct interviews both synchronously and asynchronously, according to the time and place matrix (Johansen, 1988). Programs like Skype (Skype, 2015) or WebEx Conference Call (Webex, 2015), offers the users possibility to talk with or without video. Including several participants in the conversation is possible, and these services are free, unlike using a regular phone. Other online virtual settings can be found in Second Life (Secondlife, 2015), a virtual 3D world with avatars and the possibility to act, talk and chat.

The chosen participants for this study were located in different countries, so the interviews were conducted online. The Company uses WebEx as a tool for communicating and hosting meetings across departments, so this is the tool I used to carry out the interviews. One thing to keep in mind when choosing a virtual method for data collection is that the researcher loses the opportunity to read and analyse the body language of the interviewed person. Opdenakker (2006), however, emphasises the advantages of this approach, due to the asynchronous communication of place and the extended access to potential participants, though he also acknowledges the disadvantage in the reduction of social cues. The researcher does not have the ability to read the interviewee´s body language or see him or her, but social cues as voice and intonation are still available. Further, misunderstandings can occur, along with other challenges, such as if the interviewer and the interviewee speak at the same time, or if unnecessary pauses occur if the Internet connection is lost (Opdenakker, 2006).

Researchers can choose to use structured, semi-structured or unstructured interviews; for my project, I found it expedient to carry out semi-structured interviews. With this kind of interview, the researcher develops an interview guide with different bullet points on the topics and general questions to be asked throughout the interview. One advantage of a semi-structured interview is that it gives a good balance between standardisation and flexibility, as the researcher is free to rearrange the order and formulation of the questions (Johannessen et al., 2010; Kvale & Brinkman, 2009). With the interview guide and the different bullet points,

the researcher can let the interviewee formulate answers in his or her own words, and can ask follow-up questions based on those answers (Johannessen et al., 2010). In order to allow the researcher to ask good follow-up questions during the interviews, it is necessary to establish intersubjectivity between the interviewer and the interviewee (Rommetveit, 1979). If the researcher lacks knowledge about the subject, or has difficulties understanding the interviewee, it will be problematic as he or she tries to follow up with subsequent questions.

The interview guide I used had several bullet points regarding questions I had about the interviewees´ activity in the online community and general questions about their use and daily work. During the interviews, I let the interviewees answer the questions in the ways they perceived them. I tried to use the best possible way to follow up their answers when I found it necessary to ask for additional information. I also asked for clarification if I saw a need for further explanation. During my previous internship with the Company, and after reading through all of the existing discussions, I felt I had some knowledge about the different themes discussed in the network, and this helped to establish some intersubjectivity between the interviewees and me.

4.2.4 Triangulation

A virtual ethnographic study, when combined with qualitative interviews, becomes a triangulation of the data. The use of multiple methods to collect data about a phenomenon may contribute by enhancing the validity of case study findings. Observations, whether made face-to-face or virtually, are rarely completely accurate, and case study researchers typically triangulate their data. This is possible from one method of observation by seeking corroboration from other types of collected data (Gall et al., 2007). Hine (2000) mentions a study by Corell (1995), who did online work in which she also met some of her participants face-to-face to verify some of what they said online about their offline lives. This triangulation of the findings adds authenticity to them. Hine (2000) is questioning whether interactions online are authentic when the ethnographer or researcher does not have the possibility to confirm the details interviewees give about their offline selves. The data set in my project consists of one set collected from the discussion forum in the online community, where the forum is a mediating artefact in the Company. The main data, which will be the focus of my analysis, is collected from qualitative interviews with some of the participants in the discussion forum. I have the possibility of triangulating my findings through both the

discussions and the interviews, and I hope this will give authenticity to my discussion of the research questions. An ethnographer´s search for truly authentic knowledge about people or phenomena may be difficult, since it is not an ethnographer´s role to judge whether it is safe to believe an interviewee or not. Rather, an ethnographer must try to understand how it is that the interviewees judge authenticity. The interviewee is giving a partial performance in the study rather than sharing his or her whole identity (Hine, 2000).

Within sociocultural theory, it is essential that individual learners do not become the focus of the analysis, but rather that the focus is maintained on both the individual and the social learner. Within the understanding of learning through work or from life experiences, important dimensions are both individual and social learning. The perception of learning is as a continuous process of participation in appropriate activities (Hager, 2012).

4.3 Data Analysis

When all data is collected, the next step is to make a choice about how to read and interpret it. The best method to choose will depend on what kind of data is collected (Johannessen et al., 2010). Jordan and Henderson (1995) describe interaction analysis as "an interdisciplinary method for empirical investigation of the interaction of human beings with each other and with objects in their environment" (p. 39). This way of thinking inspired me regarding the data I collected from the discussion forum. Video technology has been central in establishing the method. Learning is a distributed on-going process. It is possible to analyse face-to-face discourse and interaction between humans and objects, when the data comes from observation, taped via video or audio means. Gerry Stahl (2013a) adapted this method to analyse text-chat response structures in a biology experiment. The present project contributes to the literature by introducing interaction analysis in online environments. Due to time constraints, I decided to use the material from the interviews as my main data, while the data from the discussion forum is used as additional information for the discussion.

I was inspired by another quantitative approach, content analysis, for the interpretation and analysis of the material form the interviews. Researchers interpret the material to achieve a deeper understanding of the mean of the people´s thoughts. Within qualitative research, such

an analysis looks at the meaning of content (Johannessen et al., 2010). I wanted to let the material speak for itself, so I organised the transcriptions into different categories.

4.3.1 Data Classification

There are several ways to read and interpret data. It is possible to approach the material in a deductive, inductive or abductive way (Kvernbekk, 2002). It is a deductive approach when the study used previous research, theoretical argumentations or empirical results as a starting point (Hellevik, 2009). This is a top-down approach, where categories have a theoretical perspective. The inductive approach is a bottom-up one, where the researcher tries to reach a more general perception of a phenomenon. Previous research is not the focus in an inductive approach, and the development of a new model often occurs, appropriate for further inquiry (Hellevik, 2009). Abductive approaches start with a theory and then, after the observation is made, draw an inference about that observation consistent with the theory. The researcher is interpreting a phenomenon in terms of some theoretical frame of reference, which can be one of several interpretations, depending on the adopted theory. Abduction is about moving from one conception of something to a different, possibly more developed or deeper conception of it (Dey, 2004). For my project, I chose to read and interpret my data with an abductive approach. A framework had an influence on the development of the interview guide, with some theoretical guidance regarding the various topics I wanted to investigate further. During the interviews, I had a desire to examine the interviewees´ points of view and what could be found in the different discussion posts. With this in mind, I retrieved the relevant theories to discuss in terms of the collected data. The data was categorised into four empirical groups: The Edge as an online community, learning at work, collaboration and knowledge sharing and cultural challenges.

Based on a view of virtual ethnography described above, I collected and observed former and present activity in the online community and discussion forum posted from 8 August 2014, to 1 March 2015. I organised the 70 total discussion posts into an Excel document and noted that each post had a different number of replies. After reading through the posts, I picked out the ones of interest regarding my research questions, and was left with 15 posts. Out of those posts, I organised the names of different participants and arranged them according to the number of times they had replied to or initiated a post. Around 120 different people had been active in the discussions; I was left with around ten names of active participants. I approached

four of them with an information letter regarding my project, explaining the intentions of the project and asking if they would participate with an interview. One person in Singapore declined, another in Singapore accepted, as did one in Houston and another in Norway. I then approached one more in Houston, who accepted. Interviewees who accepted my request to participate might feel they had nothing to hide, they might not mind a researcher getting an insight into their situation. Thagaard (2013) explains this as a problem, since this factor might lead to erratic results. Interviewees declining such an invitation might have a problem with giving their insights to a researcher, and it is important then to keep in mind the composition of the selection in relation to the results of the study.

4.4 Ethical Considerations

Qualitative research methods often include personal contact with the interviewees participating in the study. In this project, I had the full names and contact information of participants visible to me through the discussion forum. There was a need for some considerations regarding the ethical issues, to avoid the abuse of sensitive and personal information. I had to consider the ethical issues both regarding the discussion forum and the interviews. The ethical dimensions of research in online settings have been much debated, and many feel that, if the existing texts are best seen as public statements, then they are a fair game for the researcher. Others see texts as the property of their authors and believe they should not be used for academic purposes without permission (Hine, 2000). I asked for and received permission to collect the data from the discussion forum, and all material I collected was made anonymous and not recognisable. My intentions with this project are beyond collecting personal information; rather, I only seek an impression of the activity available. Related to the interviews, Kvale and Brinkmann (2009) suggest four important areas of ethical guidelines for qualitative researchers: informed consent, confidentially, consequences and the role of the researcher. During my project, I tried to follow these guidelines, to ensure that the participants´ information was safe. The interviewees received an e-mail along with the information letter, in which I asked for their consent to participate. Both Kvale and Brinkmann (2009) and Thagaard (2013) mention the procedure of making the participants anonymous, which can be done by removing their names, personal characteristics and other recognisable information. The information letter explained this, so everyone I approached would know that the project would be based on anonymous participation. Considering the

discussion posts, I censored all names that appeared to be visible. The recorded interviews and transcribed materials are stored with numbers, and information that was given during the interviews, which could have revealed something about interviewees personally was removed from the transcripts. The screen shots of the discussion posts, the recorded interviews and the transcriptions are safely stored on my computer, with names that cannot be recognised with this project, in different folders. The third ethical consideration concerns the consequences that qualitative research may have on the group I am studying, and the subjects. The parameters of my study do not call for personal or sensitive information, as the project´s intention lies in the exploration of the use of the community and digital tool to try to point out the benefits that may occur from it. I believe that the Company can gain useful knowledge about how to utilise its online community and the digital tool to foster knowledge sharing and communication among the employees on a global level. The researcher´s role is the fourth and last ethical consideration, in which the sensitivity, engagement and the researcher´s integrity are important. There is a need to consider the knowledge, experience, honesty and justice of the researcher. The findings must also be presented precisely and be representative of the area of research.

4.5 Quality in Qualitative Research

For a long time, questions considering the quality and credibility in qualitative research have been asked. These often refer to the transparency of the whole research process, in which credibility relates to the validation of findings and results. Reliability of the methods and the validity of the data are issues related to quality (Seale, Gobo, Gubrium & Silverman, 2004). By making the process transparent and by describing, in detail, the research strategy and method of the analysis, the researcher achieves an enhancement of his or her project´s validity. Then, the reader can follow the research process step-by-step (Thagaard, 2013).

4.5.1 Reliability

The definition of reliability refers to the question of whether another researcher who applies the same methods would end up with the same conclusions as the first researcher. This is a critical assessment concerning whether the researcher has conducted his or her inquiry in a reliable and trustworthy way. It is important that the researcher make an argument regarding the reliability of the development of the data during the research process. The quality of the

research and the value of the results must persuade the critical reader (Thagaard, 2013). The importance of reliability lies in the researcher´s reflections, regarding the context of the data collection and how the relationship to the participants can affect and have an influence on the information collected (Thagaard, 2013). If a reader questions the data, the material might be unreliable for answering the problem framing of the project. Reliability is about whether the interviewee will give the same answers if a different interviewer asks them, if the transcription of the interviews would be the same, if done by another person and if the analysis would yield the same results (Kvale & Brinkmann, 2009). It was a thorough process to collect and transcribe material, always ensuring the reliability of the findings of this thesis. The conduction of the research project has been transparent, to show the strengths and weaknesses of the study. I have collected all material and done a thorough job with the transcription of the interviews, which I believe contribute to the reliability of the thesis. All interviews were conducted through the WebEx conference call system, which I believe contributes to the method´s validity, since I did not meet any of the participants, and all experienced the interview situation in the same way. A combination of face-to-face and online interviews could have had an impact on how the interviewees experienced the conversations, and could have affected their answers and resulted in erratic results.

4.5.2 Validity

When the data is collected, the researcher should assess its relevance regarding the research questions and the problem framing the project. Has the researcher interpreted the data in a valid way? Is the interpretation valid regarding the reality we have studied? Transparency is also important regarding validity, as the researcher must clarify the foundation of the interpretations by explaining how the analysis provides a basis for the conclusions in the project (Hellevik, 2009; Thagaard, 2013). Validity is concerned with the truth, accuracy and strength of information. It is a question of whether the chosen method is suitable according to the inquiry. It is important to include all relevant data and to leave out the ones that are not. A researcher might end up being too selective, leave out or fail to consider some data of significance. It can be dangerous to assume that the data collected in an inquiry is valid (Kvale & Brinkmann, 2009). By combining virtual ethnography, qualitative interviews and this triangulation approach, I hope to strengthen the validity of this study, as I have more than one data set of material to emphasise my findings in the discussion.

5 Data Analysis

The collected data consists of screen shots of the discussions in the online community and discussion forum, combined with qualitative interviews with four participants from the community. Virtual ethnography is the method used to collect the data from the discussion posts. The online communication and conference tool WebEx made it possible to carry out the interviews. The following chapter presents selected data collected from the discussion forums, followed by the qualitative interviews.

5.1 The Data Material

5.1.1 Discussion Forum

After the categorisation of several discussion posts, I was left with 70 posts in total. I counted the total number of replies in each discussion thread and organised the numbers of each reply in a table, to get an overview over how many replies the different posts had. This is shown in Table 5.1.

Table 5.1

The Number of Replies Per Post

Posts	24	10	8	6	6	5	6	0	2	2	1	= 70
Replies	0	1	2	3	4	5	6	7	8	9	10	

Regarding the amount of posts I had collected from the discussion forum, I had to make a decision about which I should chose for the study. I decided to look at the posts with four or more replies, which left me with 22 posts. When reading these, I found out that some were concerned with subjects not directly related to the SDS department, so those were omitted. Then, I was left with 15 posts, and out of these, I organised the names of the active participants, based on how many times they had started a discussion thread and/or replied to an existing post. At that point, I was left with a list of ten employees, some of whom had started several discussions, and some who had answered different posts several times. I listed the employees alongside the categories to determine how many times they had initiated posts,

replied to posts, their position in the network and their location. These categorises became relevant when deciding who to approach and ask to participate in an interview.

Table 5.2

The sample of Respondents

	Number of Posts	Number of Replies	Position in Network	Location
Employee #1		1	Member	Norway
Employee #2		7	Member	Singapore
Employee #3	1	7	Network Coordinator	Houston
Employee #4	3	2	Member	Houston
Employee #5	3	19	Network Leader	Norway
Employee #6	1	12	Network Coordinator	Houston
Employee #7	1	4	Member	Singapore
Employee #8		4	Member	Houston
Employee #9		4	Network Coordinator	Houston
Employee #10		4	Member	Brazil

The ten employees shown in Table 5.2 are listed according to an employee number, in keeping with their anonymous participation. The table presents the employees in terms of their level of activity, the number of posts they have initiated and number of replies they have posted. Using this table, I found that Employee 1, 2, 3, 4, and 7 were particularly interesting, and these are the ones who first received an email from me, along with the information letter. I received positive responses from Employee 1, 2, 3, and 4, who expressed a desire to participate in my study. Employee 7 replied and explained that he had just started with the Company about seven months previous, and so he did not feel it appropriate to participate. The communication with the participants was over e-mail, and the responses took a while. Due to time issues, I accepted the selection of four participants, since I realised I did not have much time to approach any more. I wanted to secure interviewees with a spread regarding their activity, position in the network and their location. I felt satisfied when I saw that I had managed, to some extent, to achieve this spread. They had been active regarding both posting new discussions and in their different numbers of replies, they belonged to different offices in different parts of the global Company and they had different positions and responsibilities in the network. The spread of the differences in their location, activity and position in the network gave me an indication that the selection would be suitable for my study.

5.1.2 The Interviews

The interviews were conducted through the WebEx conference call system. I was located in Asker, Norway, and they were located in their offices at their home locations. All four interviews were conducted over several days, the first on Wednesday, and two next the day, Thursday, and the last one on Tuesday of the following week. Consideration of the different time zones was necessary in the planning of the interviews. The three first interviews were with employees in the SDS network, all with some or complete leader responsibilities in their departments, including responsibilities for other employees or responsibilities as the department expert. The fourth interview was with an employee in the responsible department of The Edge, who had been active in the SDS network, providing information regarding questions and instructions on how to use the tool. Employee 1 had only one reply during the period I collected the material from and was mainly chosen because of his location in Norway. Employee 2 had seven replies during the period, was considered an active participant in the community and was relevant due to his location in Singapore. Employee 3 had one thread she started and seven replies. In addition to this level of activity, she holds a position in the community as a 'Network Coordinator'. Employee 4 had initiated three threads and written two replies. She is not working within an SDS department, but in the department responsible for the tool, which was interesting due to the information she might have about the tool and its functions.

At the beginning of every interview, I asked the interviewees to tell me a little bit about themselves. By getting some information about them in advance of my questions and inquiries, I was able to get a sense of their situation and work responsibility in the Company, their positions and general information that could help me understand them better. Employee 2 told me that he was originally from Western Europe and had been working in Singapore for almost seven years. This made me realise that the dispersion among the interviewees, regarding their geographical locations, was not as great as I had hoped, due them all originally coming from Western countries. Since he had worked in Singapore for seven years, however, he had a great understanding of their culture and might have adapted to their work culture in some ways. Due to the differences in culture, I believe I would have gotten a more in-depth inquiry regarding this if the dispersion had been larger regarding the interviewees´ geographic locations and nationalities.

After conducting the four interviews, I transcribed them and was left with over 50 pages of text. I read the transcriptions several times and identified some possible categories to use regarding the analysis of the material. The thematic categories arose from the interviewees´ voices, so I have let the material speak for itself.

5.2 Analysis of the Interviews

Based on the two sets of data mentioned above, I have identified four categories that will be analysed and discussed in light of my research questions. The categories are:

1. The Edge as an Online Community
2. Learning at Work
3. Collaboration and Knowledge Sharing
4. Cultural Challenges

The empirical foundation is the focus in this study, so the responses of the interviewees have been the focus of this analysis, without linking it to theory. The thematic categorises arose from the interviewees´ responses.

5.2.1 The Edge as an Online Community

To be able to get a better understanding of The Edge as an available community and digital tool in the Company, I wanted to know how the interviewees´ use the community and their thoughts on it. The following extracts show what some replies when I asked them about the use:

Extract 1

> *Employee #1: Mainly I am a member of two networks, the SDS network and one called the WCS network. This is because I am not only working with SDS, but also with WCS. I signed up for those networks when The Edge was launched. I am trying to use The Edge on a daily basis, at lest reading.*

Extract 2

> *Employee #2: I think I am signed up for a few networks, but the main ones I use are the SDS network, and then the materials and the welding ones and I have been a member since it started. I do not post questions too often. But I look about every other day, to see if there is a question that's been posted, uhm, that, I guess, needs answering or that I can write some kind of insights on.*

Extract 3

> *Employee #3: ...Right now I am a member of the, obviously the SDS network, surface [..], almost all of them. The SDS network is my main one. Different parts of The Edge I use everyday, [..], two or three times a week I monitor our discussions on the SDS page, to make sure that they are getting answered, and try to give other time to answer before I jump in and answer. I will look at the pages every morning to se what´s been posted on every ones pages[..] The other ones I am a member of is purely, since I am supposed to be the technical expert in SDS, it is kind of to keep a pulse on what´s happening on other product lines and things to ensure that they don't discover a problem that we might also have, so.*

Extract 4

> *Employee #4: In the beginning I was a member of all networks, or at least tried to be, so that I could be aware on the discussions going on, and the activities, [..]It is a good way to understand the business, to learn about it, because what happens in the networks is directly typed to what the different business groups and business minds are doing*

These four extracts show that the selected interviewees´ chose to use The Edge actively or occasionally during their workdays and weeks. They are members of their departments' main network, and other networks in addition, to keep a track on what´s going on in the different departments community. This is both to keep a track on whether other departments have answers to question they need, and to see if others have question they have the answer to.

According to the previous extract, which indicates that the use of The Edge as a community is rather high among the employees, I was curious to find out if this is expected of them and if they feel they have to use it actively:

Extract 5

> *Employee #1: No. There has never been someone who has said to me that I should use The Edge. I would say it should be expectations that people should use it, yes. But the expectations, if you will define it that way, it doesn´t come from any management. We have of course heard from the network leader that we should discuss this on The Edge and such, but no one have ever approached me and said that there is an expectation that you should be active on The Edge.*

Extract 6

> *Employee #2: Yes, I do feel that it is expected of me. A long time ago it was, I guess, a requirement. When we first started. Now we just do it, because, I don´t know, we´d like to help each other I suppose.*

Extract 7

Employee #3: Yes. The expectations come from the upper management in our department. To try to set a good example of, you know, the more senior engineers, or employees in the product line are using it and find it useful, and then newer engineers should as well.

According to these extracts, two of the employees feel obliged to use The Edge, whereas one does not feel obliged. Employee 2 says it was expectations from the start, and that this has developed into a general use, maybe integrated in their work to help others, whereas Employee 1 expresses the opinion that there should be expectations to use it. Employee 3 says it is the upper management who sets the expectations to use it, in regards to set good examples to other employees, this opinion is not shared by Employee 1. The difference in the expectations can come from the fact that the interviewees´ belong in different departments and locations within SDS, and that they have different managers with different expectations of them.

Further, I wanted ask if the interviewees´ had some thoughts and ideas about the focus regarding the use of the tool within the Company, why should it be used actively:

Extract 8

Employee #1: [..] the intension must be global information sharing, that we are going away from the, it has been very centred networks in the Company for a long time [..], I want to say it is for improvement of the products, and for information flow, on a global arena, where people can bring up relevant problems, that they have on their local sites. But it is to little active members, there might be many members, but it is a lot of people reading, but few who writes.
Interviewer: Is it any function who can show you how many who have been visiting and reading?
Employee #1: No, but that is not necessary, I think.

Extract 9

Employee #2: I was told it was to help accelerate learning, so that people aren't keeping all of their knowledge to them self, [..] it´s hard for people coming in to the organisation to, learn quickly, all this random knowledge. A part of the tool is to help, to store all that knowledge somewhere. So instead of going asking someone, we got used to saying: please post this to The Edge and then I´ll answer that question, and if someone else have the same, they can find it as well. So in the long run it gets rid of questions, and makes everybody more knowledgeable faster.

Employee 1 and 2 have a common perception about the intention of The Edge, that to be able to spread knowledge among the employees, they should use The Edge. Employee 1 has an interesting point regarding the local site and the global arena, in which The Edge can help get the local problems and issues out in the global arenas, to see if the answer or result is out there. He emphasises that there might be several who reads, but few who post something. Employee 2 says that the tool is to help store all knowledge, to accelerate learning. He thinks of it as a way to get rid of questions that keep occurring, to make people more knowledgeable faster. Employee 3 had an interesting aspect on why it is an advantage to have the online community:

Extract 10:

> *Employee #3: When all employees have access to our site in The Edge, anyone can go in, look for, and find the information they need. Regarding our time zones, this may prevent people from Australia or Africa calling me in the middle of the night just to ask a question.*

During the interviews, I told the interviewees´ how I had organised the different discussion posts, and how they were selected out of all the different names in the community, and their level of activity the last seven months. We talked about their high or occasional activity, and regarding the discussion threads I had read, I knew that Employee 1 was among the less active participants. This is what he told me:

Extract 11

> *Employee #1: Yeah, ehm, it is actually, I was asked to participate more, like a kind of subject matter expert, to be more involved in the network. But my problem, like many others, is my capacity, and my time. I want, of course, to be more active, but I have a good deal of other tasks, which I have to prioritise [..].*

This extract gives an indication that it is time consuming to be an active participant on The Edge, and that it is not everyone who got the time and opportunity to prioritise this, ahead of other work tasks, due to their work description. According to this, I was curious if the use of The Edge is something that is written in the job descriptions to the employees with an additional position in the network, and since Employee 3 is a network coordinator in the SDS network, I asked her about this:

Extract 12

> *Employee #3: No, it is not a part of our job description, and this coordinator position in the network was a part of my job scope. When we started The Edge, we said, at least starting out, that we will have the global product responsible engineers as the coordinators, to help drive discussions to where we can share the discussions.*

This shows that the level of activity and position in The Edge is not something written in the job description directly, but it might be something within the different job scopes. In the interview with Employee 2, who has been quite active with seven replies in different threads, he gave me some interesting points of view regarding his level of activity:

Extract 13

> *Employee #2: So I don´t post to often, but if there is general information that I found, or that my guys keep asking, I will post it, or I´ll one of them to post it. [..] Somebody can ask me a question, where I get someone else to post it, so I guess, it won´t show up with my name. I try to influence other to do it [..] I think it is a useful tool, and I try to encourage the use of it.*

Employee 2 puts effort in to get his employees to use the tool, so he often encourage them to post the questions they have, and the answers he gets them. This can be a good method for a manager to increase the use among the employees, where Employee 2 shows of as a good example. When he gets question directly, he encourages his employees to post the question to The Edge, whereas he can reply to that post with the answers, which makes the answers available for others to see. He drives his employees to post to The Edge and be active participants, even though it wasn´t them who had the question or answer in the first place. This can be a positive manipulation for getting employees to use The Edge.

This is interesting regarding something Employee 1 told me during our interview, when we talked about what could be done to get more people participating in the discussions on The Edge:

Extract 14

> *Employee #1: I think it will be a naturally consequence with more people using it. If not the same names occurring, I think that the user group must be bigger, and that a bigger user group will lead to more participation, and break down the barriers that I know exists. [..]. And those who actively reading in The Edge, will also notice who is answering.*

Employee 1 emphasises that a bigger user group might be a factor to get more people to use The Edge active, in which more names should occur more often. This might help decrease the possible fear of posting, when one name does not get so visible among several other names. This can match the thoughts of Employee 2, where he has a focus on getting more of his employees to post, rather than him always posting threads and replying to questions. Employee 3, told me about a function to push the content out to the members:

Extract 15

> *Employee #3: To send an announcement notification is a function to be used if one needs to quickly send out information to the members, to try to hit everyone. A limitation is then that you can send emails and announcements, but that doesn't actually mean people read it and use it.*

Regarding how The Edge is used, I also got to know during the interviews that some of the interviewees´ had some different opinions regarding whether The Edge should add the possibility to post personal information or not:

Extract 16

> *Employee #4: When The Edge was build we referred to it as a community of practice. We put that governance in place to have it a little bit more structured, because we wanted this to be business oriented, so it´s not somewhere, where you go and post pictures of your daughters softball tournament over the weekend, or your cross country ski trip you did, it´s all about business. So that government made it more formal, it was a way to ensure that the conversations were around the business, supporting the business and adding business value.*

On the other hand, Employee 3 had a different opinion:

Extract 17

> *Employee #3: [..] we haven´t figured out a good way to do it, but the product line tried to set up something to make people proud of the product line, like a brag board, like: here´s my hobby, a cool picture of my kids, etc. Try to make it even more on a personal level. I think this would drive up the traffic. Since we are a global company, we do a lot over email and phone, but not everyone gets to meet face to face. So, some personal sides of things, that kind of puts more of a face to a name, can make you think you know the person just a little bit better than just talking on the phone, or sending emails back and forth.*

Interviewer: Do you think that this might have an impact on the use of The Edge?
Employee #3: I don't know if it makes really that big of a impact on the use of The Edge, but I think it helps the drive, if someone replies to a post or put a new discussion up. You know, if you´ve met them, then you have a little bit better feeling of where they are coming from.

These two extracts show a clear distinction about the interviewees´ perception about the use of the different networks in The Edge. Employee 4 emphasises that the vision for The Edge is to keep it professional, whereas Employee 3 think it might increase the traffic to The Edge and the networks, and the advantage to have a face of the persons that are active in the global network.

The previous extracts gives an understanding on how the interviewees´ use The Edge in their daily work and their thoughts on why this is an important tool. At some point, the interviewees´ have the same opinions and ideas on the use of the tool, but they also differ on some things. They have some different opinions regarding the amount of persona information in the community, and they do have some different impressions regarding the expectations towards their daily use and the activity in The Edge. Some notices expectations from the upper management, and someone does not experience this.

Through out the interviews, I understood that there are some areas within the use of the tool and community, that addresses learning at work, and that there are functions that support this. The next chapter presents some extracts that emphasises this.

5.2.2 Learning at Work

In the interview with Employee 4, I´ve learned that The Edge is a part of a full learning circle, and this is what the responsible department have in mind when they are talking about the different tools:

Extract 18

Employee #4: We have a phrase called full circle, and the idea of The Edge, The Well and The University is that they work together, to help train our people, our employees, our contractors. If you need to focus on The Edge, that is absolutely fine, it may relate better to your thesis [..]. But all three of those platforms, work together, to help the Company become the learning organisation. Because, as our CEO have expressed [..], it is about developing our people, so that we can stay ahead of the game.

Employee 4 points out the totality, the full circle of all three platforms that makes an impact on the learning that occurs among the employees in the Company. The purpose of the full circle is to be able to develop the employees, and to become a learning organisation. This can bee seen as a corporate university, in which all functions will have an impact towards each other.

During the interview with Employee 2, when we talked about his reason and motivation to use The Edge, he told me something interesting regarding the use of the tool:

Extract 19

> *Employee #2: The Edge is a good area to see where there are gaps. If somebody ask questions about something, or the similar topic is addressed multiple times, then that highlights that there probably is a gap, as in training, gap of procedures or something´s isn't clear enough, because people aren't able to find that information, and they post to The Edge [..].*
> *Interviewer: Do you feel that the gaps get closed?*
> *Employee #2: It takes a while, but they do get closed. Yeah, if it is a significant issue, then we will, you know, raise it to the global manager, or if it needs to go to that level. Or if it is a regional thing then, it depends on the size of it. But it usually gets handled eventually.*

Through this extract, it seems that The Edge contributes to discover possible gaps in the employees' knowledge. When similar topics and questions reoccur, a pattern will be visible through the different discussion threads, and this will help to get an overview of where the employees lack knowledge, competence, or training. Further, Employee 2 said that such gap closing and increase of knowledge among the employees is possible, but it might take a while. This will depend on whether it is a global matter of subject or a regional issue. An outcome of The Edge is a discovery of gaps and the closing of them, among the employees in the Company.

Further, Employee 2 gave me an insight into how he supports his employees with training and learning, and the impact The Edge has on this:

Extract 20

> *Employee #2: I am supposed to train my employees, and I guess The Edge is one tool that helps me to train them as well, or helps them to learn by themselves, where I don't have to teach them as much. Additional tools I use are that I have created many templates, and many local work constructions. I hold trainings, where I make slides,*

and go through different subject every two weeks or something, and we´ll do lunch, besides that, just mentoring, and oh, I send them to external training, or to a different site, so they get exposure to a slightly different working style, and different projects.

With this extract we can see that Employee 2 is concerned with giving his employees proper training, both through a face-to-face contact with himself and by sending them to other sites, and through The Edge. He implies that The Edge is a good tool to let the employees read and learn on their own, which can be timesaving for him.

Employee 4 is working in the department that distributes The Edge as a tool. I wanted to ask her if it happens that they delete discussion threads in the different networks, if someone happens to post something incorrect, inappropriate or something not suitable in the community:

Extract 21

Employee #4: Not very often. More often we take it as an opportunity to raise awareness, or have an educational opportunity. If someone doesn't know how to use the functionality, or The Edge, then we reach out to them personally, to let them know, and give them the information regarding this.

This extract shows that the responsible department rarely go in to delete threads posted on The Edge. If they notice that someone has written something incorrect, they will use that experience to raise awareness and as an educational opportunity. Seen in the light of the previous extracts, where Employee 2 talks about gap-closing, this extract can show signs of such gap-closing, in which one notices that an employee is using the tool in the wrong way, or lacks knowledge regarding other subjects.

Further, I had some questions regarding knowledge sharing, both through The Edge, but also in general in the Company. The next extracts illustrate the employees' thoughts regarding knowledge sharing.

5.2.3 Collaboration and Knowledge Sharing

As seen in chapter 2, The Edge and the purpose of it, knowledge sharing is supposed to be an important function and outcome of the discussions in the community. I was curious to find out if knowledge sharing is something that exists in the Company, and what kind of thoughts the employees had regarding this subject:

Extract 22

> *Employee #1: Collaboration and knowledge sharing is, those words get thrown out here and there in different forums, but, no, or it does exist. [..] I do see that it is actually too bad, I have experienced, during some sessions where a lot of information have come out, which is very useful, and that should have been shared with other regions. So no, I would say that, there is, to a certain extent, experience transfer between the different cites and regions, but it is way to bad.*

Extract 23

> *Employee #2: Yeah, I would assume so. I think everybody is very open, it is, I guess the environment in the Company, compared to some other oil companies is a lot more group oriented, more than individually. There´s less competition between employees, who outperform each other, there is more collaboration and working together to, you know, deliver project, so I think that helps as well. It pushes a more collaborative environment, where you have a lot of cross learning, and knowledge sharing.*

Extract 24

> *Employee #3: Yes, I think that The Edge is really, have brought a lot of that together, because we can share our discussions between product lines. [..] And it doesn't make sense to have people doing the same thing in different places. You know, get one solution one time and let everyone else reap the benefits. By using The Edge discussion boards, it helps to get the knowledge out of my head and out so that everyone else can see it.*

According to Employee 1, the function of knowledge sharing in the Company is not as good as it could have been. He indicates that a lot of information comes out from different meetings and work group settings, but that information is not available for others who did not participate in those settings. Employee 2 on the other hand, has a general opinion that everybody is open, and that there is a group oriented environment, without much competition. Employee 3 is of the opinion that it does not make sense to have departments run individually, and people doing the same things in different places. All three interviewees´ have interesting points regarding knowledge sharing within the Company, whereas Employee 2 and 3 indicates that knowledge sharing is important, to achieve cross learning and

development among the employees, and that it is efficient, since the amount of workload may increase when people aren't doing the same thing in different places.

Further on I wanted to ask how knowledge sharing would have been without The Edge as an available online tool to communicate through:

Extract 25

> *Employee #1: Eh, that would have been, much worse, much worse. Often it will be, as it has been earlier, if you have some questions you approach the ones you know, or get knowledge of one that knows, that have the answer. But those persons who have that expertise, is also persons who are hard to get a hold on. And that have been a problem.*

Extract 26

> *Employee #2: I guess it would be sort of like it was before, where you would have people that you had to ask, where you would have to go through several people to get the answer, and maybe you would get to know that the person who knew this is not with the company anymore. So it would be a lot of wrap about trying to get an answer, instead of going to one single source, that everybody looks at, to answer questions. An advantage with The Edge is that I don't have to answer the same questions, from my perspective, over and over again.*

Extract 27

> *Employee #4: You know, I think people did it without realising they were doing it. When you talk to somebody at, what we call the water cooler, when you go get a cup of coffee in the kitchen, they are chatting and sharing knowledge, I never thought about that as knowledge sharing, but that's what´s it is. It wasn't formalised and it wasn't structured, but things that, I think that The Edge gave us that governance.*

Both Employee 1 and 2 said that it would have been like it was earlier, that you had to find the person who might have the answer, with a risk of that person not being available to help, or that the person have left the Company. Employee 2 emphasises the advantage with him not have to answer the same questions repeatedly. Employee 4 mentions the possibility of knowledge sharing existing long before The Edge, just not as formalised and structured as it is today.

According to Employee 3, who explained in Extract 11 that the level of activity in the community is not something written in their job descriptions, I wanted to ask the interviewees´ if they would consider their use of The Edge a part of their primary or

secondary work. We talked about how they would categorise their own use of the tool and community, and how they would categorise knowledge sharing in general:

Extract 28

> *Employee #1: Knowledge sharing is a part of my secondary work. Regarding the use of The Edge, I feel that, it should be an equal distribution. At least I hope it will be. [..] But it seem that ideas and suggestions have started to appear on The Edge, and technical discussions is - it is a consequence of a primary task one are working with. Ideas and suggestions are more secondary things, at least operations and on the engineering side are concerned with the technical questions, but also, when we have some time to sum up, then we are focusing on creative ideas, and to flag these. And often, I feel, it seems that one more often gets encouraged to come up with these ideas, because a good idea can be a good idea, but it might also be impossible to complete.*

Employee 1 emphasises that knowledge sharing and the use of The Edge should be an equal distribution, and points out that questions regarding their technical job often includes his primary work, where ideas and suggestions belongs within the category of secondary work. He seems satisfied with the fact that people have started to add ideas and suggestions in the network.

Extract 29

> *Employee #2: I would say it is my, it will be my primary job. Just because of the position I´m in. I would say for, just say in project engineer it would be secondary, but if you are in a lead position, where you have either people you are mentoring, or people you are managing, it should be your primary work. To The Edge specifically I would say secondary; it is not in my job description.*

Employee 2 points out that primary and secondary work regarding knowledge sharing and the use of The Edge mainly depends on your position within your department. With a manager or mentor role, this should be a part of the primary work tasks, but working on a project as an engineer, it would be a part of the secondary work.

Extract 30

> *Employee #3: About knowledge sharing I would say more secondary, but many days it´s ending up being the primary, it depends on what day it is. Since I am the global technical contact, I typically get emails everyday, asking specifics on equipment, or wanting to know information about older systems and things like that. Many times I´ll take that and repost it to The Edge, or tell those guys; hey, go put that up as a discussion, and I´ll reply there, so everyone else can see it. The use of The Edge is within my secondary work.*

In this extract Employee 3, explains how knowledge sharing shifts between primary and secondary work, as a result of her position as a global technical contact. She emphasises that the use of The Edge is as a part of her secondary work, and that she encourage others to post their question on to The Edge, so it is available for others as well.

5.2.4 Cultural Challenges

The network I collected my data in is a Global network for all employees working in the Subsea Drilling System departments, and others interested in that area. Is it some cultural challenges regarding the use of The Edge? The following extracts shows what the employees experience regarding this:

Extract 31

> *Employee #1: About cultural challenges, it might exist. It is nothing I have reflected over earlier. But I know that, it know that we have people who reads The Edge, but they are not using it, because everything has to be in English. But we have encouraged, it is possible to ask in The Edge, but through a third part. Then it is possible for us to formulate it, and this have happened. The linguistic barriers becomes an additional thing, which it shouldn´t.*

This extract shows that Employee 1 have experienced linguistic barriers regarding the use of The Edge, and that they have tried to encourage all employees to use it despite of this. If some have problems expressing themselves in English, which is the main language to use in the community, he has encouraged employees to write to him, and let him translate it and post it on The Edge.

Extract 32

> *Employee #2: It seems that Asia get´s ignored a lot. It is harder to get attention to issues over here, than it is in other areas. Since it is, I guess, since the upper management tends to be in those locations. And over 50% of my team, at least, their first language isn´t English. Their English is decent, but I think there is some, I guess, just being kind of shy, or scared to post questions to The Edge, because you don´t know all of the people that are replying, they don't want to ask a stupid question. The Asian culture places a lot of value on, I guess not loosing faces. If you have*

Employee 2 also emphasises the language as a challenge, since he is working in Singapore, where the main language is not English. According to him, the Asian culture is concerned with not loosing faces, that they might be too shy to post anything. He, along with Employee 3 and 4 in Extract 14 and 15, points out the fact that one does not know every one

participating in the discussions on The Edge, and he thinks this is a limitation. That his employees might not want to ask a stupid question, frighten to get judged by someone one do not know. He is experiencing tendencies that Asia is ignored sometimes, since the upper management tends to be in other geographical locations.

On the other hand, Employee 1 seems to have a different opinion regarding who in the Company that is the most active:

Extract 33

> *Employee #1: I would say that Asian Pacific and Western region are dominating. Based on the names I have seen, and those I have been in direct contact with, I might say that, it seems that Asian Pacific, Singapore, Malaysia, typically, are maybe the ones that are most active. Especially when it comes to addressing issues, and that the Western regions might be the most active regarding the replies to the issues.*

These two extracts show some differences in the employees' opinion regarding the level of activity in the Asia region versus the Western region. Employee 2, who works in Singapore, have the impression that his employees is not that active, due to their fear to loose faces, whereas Employee 1, on the other hand, are of that opinion that most of the activity, regarding addressing issues, comes from the Asian Pacific region.

Extract 34

> *Employee #3: I have seen that some people are very hesitant, people outside of Houston having English as their secondary language. They are hesitant to post something, if they do not think the grammar or the wording is correct. [..] That is something that we have to work with, that there is no such thing as a dumb question, and if someone feels uncomfortable posting the questions to the discussions, many times I have posted things, for information only, without putting their name on it, so that the answer is out there for everyone anyway. The main challenge is the language.*

Extract 35

> *Employee #4: It is as simple as the language barrier. We are a company based in the US, and English is supposed to be the primary language of the company, but we have people that never had an opportunity to learn English for instance. There are also cultures that do not post as freely as others, where they are not as comfortable with it, for cultural reasons.*

These two extracts shows, as well as the two previous ones, that language is the main challenge regarding having one tool for all employees to use on a global level. All four of the

interviewees´ emphasised the linguistic barriers, both with employees not feeling comfortable to communicate in their second language online, the fact that some cultures do not feel as free to share information this way as others, and that employees hesitate to post discussions and replies, because of a fear to loose face.

6 Discussion

The previously presented data and analysis constitute the basis for the discussion. In this chapter, I discuss the findings in light of the theoretical perspectives (Ch. 3) and the notion of community and the Company's vision regarding it (Ch. 2). The research questions are the basis for organising this chapter, which aims to explore how the online community fosters communication and knowledge sharing. The specific research questions are:

1. What characterise the use of an online community?
2. How is knowledge sharing facilitated?
3. What is the impact of cultural differences on the activities in an online forum?

6.1 What characterise the use of an online community?

Web 2.0 has given us the possibility to communicate and interact in new ways, (i.e., globally), and referred to as a read-and-write tool (Greenhow et al., 2009). The Company uses, among other tools, email, web conferences and The Edge to enhance communication and collaboration. Online communication tools, such as blogs, wikis, virtual worlds, online communities and Internet forums consist of groups of people who can work and communicate together even if they are not co-located (Rheingold, 1993). According to Kear (2010), this opens up possibilities for collaborative work within an organisational context. The interview data indicates that the use of an online community occurs in several different situations throughout the employee's daily work. This section presents a discussion regarding the use of an online community in light of current research.

6.1.1 Uses and expectations

The Company is focusing on knowledge management as an influence to help the employees do their jobs in a better way. This is important in order to achieve individuals´ objects and to reach the Company´s strategic goals. The Company introduced The Edge in 2011, as a contribution to these visions, hoping that an online portal would get the employees to communicate and discuss in a better way. Rheingold (1993) first introduced the term 'virtual community', also referred to as online community, and The Edge fits in this description. It

consists of employees who collaborate and communicate across geographical locations with the help of the Internet.

Extracts 1-4 show that all four interviewees visit the community every other day to read new posts and keep up with the activities going on. They are all members of several networks in order to keep themselves updated about other sites as well. Halfaker et al. (2013) found that open collaboration societies, such as wikis, are good information resources if the participants are active. The interviewees explained that they visit The Edge rather often, but that they do not post very often. Two of the interviewees said that they would reply to posts that needed answers, but might try to give others time to answer first. In light of sociocultural theory and Vygotsky (1978), the online community is comparable as a sociocultural tool developed by the Company to cope with the everyday life (Säljö, 2001) regarding the employees' work. The community is a mediating artefact for the employees, integrated into their social practices and the everyday work of the Company (Vygotsky, 1978; Wertsch, 1998). The online community, as a mediating artefact, has a significant impact in this particular Company, in which all four interviewees expressed that they use it quite often. The employees are able to communicate with each other despite their geographical locations, and the online community is integrated into their daily work. This community might not have the same impact on a smaller company, where all employees is situated at the same location, and in which online communication might not be as essential.

The interviewees try to keep a pulse on what goes on in the community by reading updated posts and replies, and replying to questions they have the answers to, or where they see it as necessary. This keeps the activity in the community going. When there is a high level of participation, the Company might achieve an optimal place for learning, within The Edge. The Edge consists of over 60 networks, and it was recommended that I conduct my study in the SDS network, a community with 566 members. This is a rather small community, considering the 20,000 employees employed by the Company, and several other networks and communities that exists. According to the study Halfaker et al. (2013) conducted, the SDS network might be a good information resource, since the level of activity among the members, the network coordinators and the network leader is quite high. In order to determine if the community itself is an optimal place for learning, a study of several networks within The Edge should be conducted a study, to find out if the high level of activity occurring here is also found in other networks within The Edge.

Halfaker and colleagues (2013) found that participants who were encouraged by invitation to edit a wiki page might be useful to maintaining such pages. In Extracts 5-7, the interviewees talk about whether or not they feel obligated to use the community and be active, and if it is expected of them. Some of them feel obliged by the upper management to use it, so that they are seen as a good example for other employees. Such expectations might give negative associations to the community, so that employees end up using it based in wrong premises, such as using it only because of expectations, not because they want to or deem it productive. Employee 3 emphasised that using the community is not a part of the job description, but more a part of the job scope. Extract 13 indicates a way of encouraging employees to use the community to ask and answer questions, where Employee 2 gets his employees to be active instead of being active himself. This might be comparable to the function used Halfaker et al.´s (2013) study, in which they sent out invitations to edit a wiki page. Employee 2 tell his employees that they should post questions on The Edge, so that he can answer there, instead of answering the question face-to-face. In this case, such encouragement, either by face-to-face conversations or by a function implemented in the community, could be a better way to get more people to use the community actively, instead of expecting a high level of self-directed employee activity.

According to the description of The Edge as an online collaboration portal for sharing knowledge, gathering and connecting employees and to fostering communication, the community can be compared to a knowledge management system (KMS), on which Hjelmervik and Wang (2007) conducted a study. They suggest a structure for the system developed and implemented by the management. According to the previous examples in the Extracts, there seems to be some support from the management regarding the use of the community within the Company. This is seen by the expectations some of the interviewees´ experiences regarding their use, since some of them feel, to some extent, an expectation from the upper management to use it. This at least shows that the implementation of the community actually is actually supported by the management.

6.1.2 Lurking

Hine (2001) and Mørch et al. (2013) define a lurker as a person who neither posts nor writes something in an online community. It can be hard for researchers to get a clear picture of the activity of a lurker, since he or she leaves no trail, such as replies to posts. Employee 3 emphasises in Extract 15 that it is not necessarily true that people read the posts, even when they are sent as emails or announcements to the members. Extract 8 shows that there is no function in The Edge, that shows how many people have actually read the different posts, or at least no such function is visible to the community members. By adding such a function to The Edge, it would be possible for all members of the community to see which posts have been read by different people, which posts are the most read and so on. Employee 1 does not think this is necessary, but it might be something to consider, as it would allow all participants in the community to see who is actually participating. This might also lead to unnecessary use of The Edge, if employees start to read more often, participate only to show off or to prove to the management that they are active. Further, Hine (2001) points out that a lurker may be important in a community, but only if the lurking individual eventually becomes an active member.

Hsieh et al. (2013) found that users who strongly identify with a community are more likely to help newcomers to the community. If a function that shows who has read a post is available to the community, it might be easier for the long-time, active members to help a newcomer who acts as a lurker. There might also be lurking individuals who are gaining important advantages from reading the content others have contributed despite the fact that they do not participate by adding anything in particular. They, and their lurking, still might be valuable to the Company in other ways. As Ackerman (2007) emphasised, it is important that the design of an online system be developed as a resource for everyone in a group or organisation, so that such a mediating artefact is useful for all, despite differing levels of activity.

6.1.3 Scaffolding

Scaffolding occurs when an individual gets support while learning something new, and the supports fades away as she manages on her own (Pea, 2004). Within an online community and its construction of governance (Figure 2.1), one might say that the network leader, coordinators, core team members and subject matter experts serve the function of human scaffolds for the employees. Extract 12 shows that coordinators should help drive discussions

and activity in the networks, followed by Extract 16, when refers to governance as something developed to structure the discussions and to keep the community business oriented. Therefore, the individuals with extra responsibility in the network, as coordinators or subject matter experts, might not directly function as a scaffold for the employees, but they might contribute to the scaffolding process. The online community itself might be compared to a technological scaffold for the employees, as Extract 9 might indicate. Employee 2 perceives The Edge as a tool for new employees to obtain new knowledge and to be able to learn more quickly, still, it would not be completely correct to call the community a form of scaffolding, since it does not have functions that allow the support to fade away when the learner manages on its own.

Andersen (2007) emphasises that the concept of Web 2.0 may contribute to a certain extent in education settings, in which wikis or multimedia-sharing services are used. The online community may give such opportunities, in different areas, and, according to Employee 2 and shown in Extract 19, The Edge might be a good area for discovering gaps in training or gaps of procedure. If the same questions or problems keep occurring, it would be an indication of gaps in individuals' knowledge or gaps in the entire group of employees or organisation.

6.1.4 Different time – different place

According to the time and place matrix introduced by Johansen in 1988 (Figure 3.1), The Edge allows communication within the fourth column, different time – different place. The Company makes use of all communication forms, with different tools to support these functions. By opening up the possibility of communicating in different times and places, the different branches of a company can collaborate despite their different time zones and locations. According to Kear (2010), asynchronous communication may be beneficial for a company, and tools like The Edge not only make it possible to communicate despite different time zones and locations, they can also add a permanent record of the communications that employees can search for at any time. Employee 3 emphasises this in Extract 10, pointing out that The Edge gives all employees the ability to look at the different networks in the community and, to find the information they are looking for. This makes it possible to decrease unnecessary communication outside of working hours or in different time zones. Also, when an employee seeks information and answers within the networks, if he or she determines the topic does not exist in the network, a post can be made asking the question.

When people from all countries contribute to the posts with their own questions and replies, it makes it possible to share the communicated content now available to all who are interested.

Pritchard and Wollard (2010) emphasise that ad hoc scaffolding occurs when experts and learners are at the same place at the same time. However, according to the time-and-place matrix, communication is possible in different times and place settings, if the right tools are available. With an online community available to anyone in the Company, one can ask if it is possible to achieve situational scaffolding when the same place and time are not shared. The interviewees all expressed that they try to use the tool on a daily basis, at least to have a look if there are some issues that need answers. This gives us an indication that they have the possibility of supporting other employees with their 'expert' knowledge, when needed. The governance around The Edge might provide such support, given that the employees who have extra responsibilities regarding the network are following up on the posts that appear in the community.

6.1.5 Communities of Practice

In Extract 18, Employee 4 points out the idea of a full circle, with The Edge, The Well and The University as cooperating factors to train employees. It is a totality of the platforms as one unit, which work together. In Extract 16, she mentioned that the department referred to The Edge as communities of practice (CoP). This is a theory of learning presented by Lave and Wenger (1991). It refers to individuals coming together voluntarily to interact to achieve more knowledge and expertise in a common area. Within an organisation, a CoP might consist of workers who organise their lives with other colleagues to get the job done and who work systematically to solve problems. It is often possible to find different communities of practice within an organization. According to the definition presented by Lave and Wenger (1991), it would be incorrect to present The Edge as one CoP, since it is, to some extent, an expectation that the employees will use the community. If the community were a supplementary tool, available for the employees to use if necessary, but without any expectations, it would fit the description of a CoP, even though only some of the interviewees pointed out feelings of expectation regarding their use of The Edge. The Company launched The Edge in 2011, and at that time, the expectations for using the new tool might have been higher, than they are today. With this in mind, there may be reasons to believe that some employees might perceive The Edge as a CoP. On the other hand, one can consider that The

Edge consists of several CoPs, where each network might be different communities. With this in mind, it is possible to consider that the different networks or communities the employees have a membership in, are voluntary, without any expectations.

A community of interest (CoI), is best described as a collective concern for the solution of a problem. Such a community might occur when individuals from different CoPs come together around a common interest to solve one specific problem. The individuals seeking such a community might not necessarily intend to become long-term members, but instead desire to seek the solution to a technical problem (Fischer, 2013; Mørch et al., 2013). As shown in Extract 1-4 all interviewees are members of their main network, the SDS network, and they are members of several other networks, allowing them to keep a pulse on what is going on in the different communities. Regarding the difference between CoPs and CoIs, it might be possible to believe that, when employees are members of a main network, where they intend to be long-term and participating members, it is comparable to a CoP. As soon as they seek other networks, outside of their work scope, it might indicate a search for a CoI, where they might not intend to become active and participating members, but only to seek answers right now. Such a comparison, between defining The Edge as a CoP or a CoI, is not something that was an intended focus at the beginning of this study, but the comparison arose throughout the inquiry process. This is something to keep in mind for further research, to involve participants from several networks, not just one (as in this study), to explore the employees' intentions regarding their use of such a community.

6.2 How is knowledge sharing facilitated?

As explained in Chapter 3.2, knowledge exists in different forms. According to Nonaka and Takeuchi (1995), there is a distinction between knowledge and information. Within the perspective of The Edge, one can explain that the written material in the community and different discussions is information. Knowledge, defined as beliefs and commitments, may occur when and if the employees make use of the information that exists in the community. Extract 8 shows that Employee 1 refers to the intension of The Edge as a place to share information globally, to achieve information flow and to bring up problems. This might also indicate that the employee would see its contents as information, when it is available via the discussion in The Edge. According to the different extracts from the interviews, all interviewees implied that they use The Edge often, at least reading the information that exists,

to keep them updated on the activities going on in the Company. It is not clear whether they actually use the available information at any point. Regarding the employees' different job scopes, where Employee 3 is a network coordinator, and holds a managerial position in her department, the same as Employee 1 and 2, they fit in the description as experts or core members in the community, when seen in light of the study conducted by Mørch et al. (2013). The core members contribute their support to the community, but they do not belong to the category of those participants who need the support, regarding their integration in the community, and they might have a good knowledge base regarding their job scope.

A different selection of interviewees, ones who could have been described as newcomers or as lurkers in the community or employees without a managerial responsibilities, it might have been possible to get a deeper understanding about whether the existing information actually does turn out to become knowledge. This would also fit the descriptions of 'knowledge in the world' and 'knowledge in the head', as presented by Donald Norman (2001), where the discussion forum consists of available knowledge that is available out in the world, while knowledge in the head occurs after being attained through practice.

6.2.1 Does Knowledge Sharing Take Place?

Knowledge consists of learning strategies and methods of conducting inquiries, combined with experience, context, interpretation and reflection (Novak, 2010). Knowledge sharing can be an activity where participants come together to make established knowledge useful for solving new problems (Ludvigsen & Nerland, 2013). Such a definition of The Edge might be suitable. The interviewees explained that knowledge sharing does exist in the Company in some ways. Employee 2 expressed that the environment in the Company is open and group-oriented, compared to other companies that might have a more individually oriented focus. Employee 1 does recognise, to some extent, experience transfer between the different sites and regions, but he emphasise that it should have been better, with more people being active in The Edge. Both Employee 1 and 2 point out that The Edge, as an available community to share knowledge, serves a positive function. Employee 2, in Extract 26, says that one advantage is that it takes some of the workload off his shoulders, because he does not have to answer the same question over and over again, since he can refer to his answers as available in The Edge. Employee 4 emphasises an earlier problem regarding the difficulty of getting a hold of the person who has the expertise one needs. When the expert has the option of posting

an answer directly to the community, the answer will become permanent document. This also reduces the workloads, since an employee who needs an answer does not have to use valuable time trying to reach the right person. According to the definition offered by Ludvigsen and Nerland (2013), presented in Chapter 3.2, it might be possible to see The Edge as a facilitator of creative actions, where knowledge is constructed to allow employees to achieve solutions and make existing knowledge useful for solving new problems.

6.2.2 Is Knowledge Sharing Primary or Secondary Work?

According to Employee 3, shown in Extract 12, the level of activity and the position as a network coordinator is not something written in her job description, but it comes along with her job scope. In light of the findings of the study conducted by Mørch and Skaanes (2010), this is comparable to a distinction between primary and secondary work. Between the interviewees, there seems to be some differences between how they categorise their work. As shown in Extracts 28-30, Employee 1 sees knowledge sharing as a part of his secondary work, but he feels that it should be an equal distribution. Employee 2 sees it as part of his primary work, because of his positions, whereas Employee 3 points out that it depends on the day and the particular work she is doing from day to day. Employee 1 makes an interesting distinction in Extract 28, in which he differentiates between primary work concerned with technical questions, and secondary work, which is concerned with ideas and suggestions. In Extract 28 he points out:

> *Employee #1: [..] Ideas and suggestions are more secondary things, at least operations and on the engineering side are concerned with the technical questions, but also, when we have some time to sum up, then we are focusing on creative ideas, and to flag these. [..]*

This indicates that the table Fischer (2013) presented, concerning multiple learning strategies (Table 3.1), is something that actually exists in the Company. Employee 1 refers to the technical questions as primary work, which is comparable to the fix-it level in Table 3.1. Whereas the secondary work, seen as ideas and suggestions, is the creative part they can focus on when they have the time to sum up, which can refer to the reflect level within the table of multiple learning strategies.

6.3 What is the impact of cultural differences on the activities in an online community?

This study was conducted using a global network through which employees from different sites and locations come together to collaborate and share experiences and information regarding their work scope, all within the Subsea Drilling Systems community. This made it interesting to see if the interviewees experienced any cultural challenges. As shown in Extracts 31, 32, 34, and 35, all interviewees experienced a language barrier during some activities. There are employees who are hesitant to post or reply, as they are afraid of losing face on account of their imperfect English, or because they fear giving the wrong answer. The interviewees point this out on behalf of other employees, so it is important to emphasise that this is just and indication made by them. This makes it hard to know why some employees might fear giving a wrong answer, if it has to do with the Company culture or their homelands´ traditional culture.

6.3.1 Common Ground and Intersubjectivity

According to Clark (1991) and Rommetveit (1979), who have been important contributors to the research fields of language and verbal communication, common ground or intersubjectivity is important when one wants to achieve as much as possible from the communication. Rommetveit (1979) emphasises the importance of communication within the same social context. Does communication within an online community count as the ‘same social context’? Communication within a community, compared to face-to-face communication should be counted as two different contexts, but as long as all participants are known to the community and its users, and so long as they share the same company goals, it might be possible to see an online forum as a same social context, as referred to within intersubjectivity (Rommetveit, 1979).

Intersubjectivity and common ground focus on the importance of mutual belief, shared conception, or knowledge regarding a subject. To achieve this, it can be important to speak the same language. Accordingly, it is essential to ask if the common ground and intersubjectivity, shared among the participants in the online community, is lost because of linguistic barriers. The members within the SDS network might have a common understanding or ground regarding their job scope, because they all work within the SDS

fields in their respective regions. With a challenge regarding the language, however, some might have problems with discussing formulations, and misunderstandings might occur as an outcome as a result.

Clark and Brennan (1991) point out that common ground might change with the medium used, regarding how communication occurs. The communication within a group might vary if they are physically together, versus if they are participating in a meeting with the help of technology. As shown in Extracts 16 and 17, Employee 3 and 4 both point out different opinions regarding the level of personal information that should be allowed on the network. Employee 3 emphasises that, by allowing it, maybe a brag board or similar, the Company might increase the traffic within the community, and an advantage would be gained by capturing the attention of participating employees. This employee seems to see this as preferable to knowing nothing about the others in the community. Regarding Clark and Brennan´s ideas (1991), this is an interesting concept. They emphasise that the communicating person must be aware of what the other people know, so that they can send a message that is understandable to all recipients. With this in mind, they refer to the knowledge that recipients have, regarding the sent message, but it might also be hard to send an understandable message when the recipient might be a total stranger. Knowledge sharing might be hard to achieve in such situations. Seen in the light of Employee 3´s comment, it might be a good idea to allow some personal information onto The Edge, to try to achieve a common ground regarding the awareness of one´s fellow participants in the community.

As an example of the importance of achieving intersubjectivity and common ground among employees in the Company, Employee 2 emphasises in Extract 9, that The Edge is a good way to keep people from hoarding all of their knowledge for themselves, and to accelerate common learning in the Company. Further, Employee 3 points out in Extract 24 that the discussions in The Edge help get the knowledge out of her head, so that it is available to all. This is comparable to tacit knowledge, which exists in our abilities, memories, and intuition. Such knowledge is hard to transfer, but it might be very valuable for the Company. It consists of knowledge employees have learned and gained throughout their job experience. In traditional circumstances, when an employee leaves the Company, his or hers tacit knowledge is withdrawn. On the other hand, explicit knowledge exists in a linguistic form, and it is transferable via databases or documents. There should be a goal to transmit tacit knowledge, so that it becomes explicit knowledge that exists in The Edge. If the members of the

community have achieved intersubjectivity and common ground regarding the issues presented in the community, the transition from tacit to explicit knowledge might be achievable.

6.3.2 Perceived benefits regarding knowledge sharing

Bordia et al. (2006) implies that mutuality, trust and recognition are important factors of knowledge sharing, whether it occurs through face-to-face interactions or through a database. Different elements exist that might prevent knowledge sharing to occur. Their study tried to find the differences between sharing knowledge interpersonally and via databases, regarding evaluation apprehension and perceived benefits. The findings are quite interesting, as evaluation apprehension increased among employees when knowledge was shared through a database, most likely since the written content was perceived as permanent. On the other hand, perceived benefits was positively associated with knowledge sharing intensions in a database, perhaps because the employees then had the opportunity to grasp the shared knowledge at any time.

In Extract 14, Employee 1 emphasise that the number of user groups in The Edge should increase, and that such a factor might lead to higher level of activity in the different communities. According to the study of evaluation apprehension and perceived benefits, it is possible to consider that knowledge sharing through a digital tool might be scary, regarding taking ownership of information, or lack of trust in one´s co-workers. This is comparable to the saying of Employee 3 and 4 in Extract 14 and 15, about the level of personal information shared in the community. By allowing some personal level in the communities, it might be possible to achieve trust among the participants, to decrease fear of loosing face by participating in the online activity.

7 Final Reflections

In this thesis, I have explored how an online community fosters communication and knowledge sharing in a global Company, where I wanted to conduct an inquiry into the use of such a community. My research questions aimed to explore what characterises the use of an online community, how knowledge sharing is facilitated and what impact cultural differences might have on user´s activity. In order to explore these questions, I conducted a virtual ethnographic study on the existing activity in a community, and combined it with qualitative interviews with four members of the community. The total data set includes the posts in the community´s discussion forum and the interview data. Based on the research questions, a summary of the key findings and the following discussions appear below.

7.1 Key Findings

7.1.1 What characterises the use of an online community?

The data gleaned from this study indicates that the SDS network community has a rather high activity level, at least in light of the interviewees´ responses. All interviewees hold leading roles in their respective departments. To some extent, there is an expectation that the employees will make use of the community, considering their level of activity and to keep a pulse on the posted topics and questions. All interviewees are voluntarily members of other networks in addition to their main one, which might indicate that it is possible to use The Edge as a community of interest, in addition to referring to it as communities of practice. There might be ways of encouraging the employees to make use of the tool, such as by implementing a function that sends out invitations to members to participate in the community. Such an encouragement can be a better way to increase the level of activity, rather than expecting this from the employees on their own.

All in, the data indicates that the community is well implemented in the SDS department, with good possibilities for the employees to communicate in an asynchronous way, at different times and different places. The governance in place to support the activities of the community works as scaffolding to encourage, drive and increase the level of activity, whereas the community as a digital tool works as scaffolding to support the members. Such scaffolding

might also help lurkers and newcomers to the community to become core members and participating members.

7.1.2 How is knowledge sharing facilitated?

The Edge is seen as a facilitator for knowledge sharing among the employees in the SDS network, where it helps store existing information, making it available for others to make use of and from which they can obtain knowledge. It is also perceived as serving a workload-reducing function, since posted information and earlier discussions are available at any time. Knowledge sharing occurs both in primary and secondary work, depending on the position one has. Technical issues and questions are regarded as within primary work, whereas ideas and suggestions belong to secondary work. This indicates that multiple learning strategies exists within the SDS network. However, it might be difficult to achieve proper knowledge sharing, when linguistic barriers are considered. This is a discovery addressed in the next research question.

7.1.3 What impact do cultural differences have on online forums?

The findings focused mainly on the linguistic barriers, rather than cultural differences. This is because the dispersion in the selection of the interviewees was not ideal, in that all interviewees originally came from a Western country. All four interviewees emphasised that language was the prime barrier on The Edge. None of them had this problem themselves; they simply indicated it based on their experience in the Company. This makes it hard to draw a conclusion regarding the scope of this barrier, but since all communication is based through an online community, the factors of intersubjectivity and common ground are considered significant and must be achievable to facilitate knowledge sharing. This might have an impact on serving tacit knowledge to transfer to explicit knowledge, if the shared information is obtained and developed as knowledge from the world, with an aim to become knowledge in the head.

7.2 Limitations and Directions for Further Research

This study is based on the SDS network and the existing activity in its discussion forum, combined with qualitative interviews with four participants members of the community. This is quite a narrow selection regarding the network and the interviewees. The size of this thesis made it necessary to use a selection of data that made it possible to accomplish the study

within to the given time frame, and the size of the final thesis. All findings presented in this thesis are based on the outcomes of the interviews with the four interviewees and their particular network, which makes it impossible to draw inferences regarding the use of the tool across the whole Company. Thus, a study such as this can still give indications toward the areas in the functions of the network with room for improvement.

While the study was being conducted, I realised that the chosen participants would not give me the dispersion of subjects I had hoped for, in terms of their geographical locations. On the other hand, all interviewees gave me an additional aspect to consider; namely that the factor of linguistic barriers might present a bigger challenge, to users than I had first assumed. I was initially interested in exploring geographical and cultural differences, but I ended up being more fascinated by the challenges that might occur regarding language barriers. As a suggestion for further research, I want to point out the challenges related to intersubjectivity and the goal of achieving a common ground as interesting factors for future consideration, if one is interested in communication and knowledge sharing in an online community.

Another interesting aspect that arose through the study was the definition initiated by the Company, of The Edge as different communities of practice. During my exploration of the community´s discussion posts, and through the interviews, some indicators occurred, that made me question whether The Edge best fit the description of a CoP or a CoI. Since this question arose during the study, mostly after the conduction of the interviews, I did not have the opportunity to consider it further. As another suggestion for further research, I would recommend a study of the junction of different networks, with a greater dispersion regarding the interviewees than this study had, to explore if it might be possible to make a conclusion regarding which definition best suits The Edge and online spaces like it.

One last suggestion for further research in The Edge as an online community would be to conduct a quantitative study on the interaction of actors and network, with a perspective of an actor-network theory (ANT). This is a theory presented by Bruno Latour (1987), to describe how actors behave and affects a society, without making a distinction between human and non-human actors in a network. By conducting such a study in this community, it might be possible to get an understanding in how the different actors, that participate in a visible or non-visible way, influence the use of the online community, considering that the members are spread around the world, in different regions, sites and locations.

References

Ackerman, M. S., Halverson, C. A., Erickson, T., & Kellogg, W. A. (2007). *Resources, co-evolution and artifacts: Theory in CSCW*. Springer Science & Business Media.

Andersen, P. (2007). *What is Web 2.0? Ideas, technologies and implications for education* (Vol. 1, No. 1). Bristol, UK: JISC.

Bråten, I. (2002). *Læring I sosialt, kognitivt og sosial-kognitivt perspektiv.* Oslo: Cappelen Akademiske Forlag AS.

Daradousmis, T., Caballé, S., Juan, A. A., & Xhafa, F. (2011): *Technology-Enhanced Systems and Tools for Collaborative Learning Scaffolding.* Springer-Verlag Berlin Heidelberg

Delamont, S. (2004). Ethnography and participant observation. In: Seale, C., Gobo, G., Gubrium, J. F. & Silverman, D. *Qualitative Research Practice.* London: SAGE Publications Ltd

Dey, I. (2004). Grounded Theory. In: Seale, C., Gobo, G., Gubrium, J. F. & Silverman, D. *Qualitative Research Practice*. London: SAGE Publications Ltd

Dirckinck-Holmfeld, L., Jones, C., & Lindström, B. (2009). *Analysing networked learning practices in higher education and continuing professional development*. Rotterdam: Sense Publishers

Easterby-Smith, M. & Lyles, M. A. (2003). *The Blackwell Handbook of Organization Learning and Knowledge Management.* Malden: Blackwell Publishing.

Gall, M. D., Gall, J. P. & Borg, W. R (2007). *Educational research: An introduction* . Longman Publishing.

Hager, P. (2012) Informal learning – everyday living. In: Jarvis, P., & Watts, M. (Eds.). (2012). *The Routledge international handbook of learning*. Routledge.

Hellevik, O. (2009). *Forskningsmetode I sosiologi og statsvitenskap*. Oslo: Universitetsforlaget

Johansen, R. (1988). *Groupware: Computer support for business teams*. The Free Press.

Johannessen, A., Tufte, P. A. & Christoffersen, L. (2010). *Introduksjon til samfunnsvitenskapelig metode.* Oslo: Abstrakt Forlag AS

Johnson, B., & Christensen, L. (2012). *Educational Research. Quantitative, Qualitative and Mixed Approaches.* California: SAGE Publications, Inc

Kear, K. (2010). Collaboration via online discussion forums. Issues and approaches. In: Donelan, H., Kear, K. and Ramage, M. (2010). *Online Communication and Collaboration: A Reader.* Routledge

Kozulin, A. (Ed.). (2003). *Vygotsky's educational theory in cultural context*. Cambridge University Press.

Kvale, S. & Brinkmann, S. (2009). *Det kvalitative forskningsintervju.* Oslo: Gyldendal Akademisk

Kvernbekk, T. (2002). Vitenskapsteoretiske perspektiver. *Innføring i forskningsmetodologi. Oslo. Unipub Forlag*

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge university press.

Latour, B. (1987). *Science in action: How to follow scientists and engineers through society*. Harvard university press.

Ludvigsen, S. & Nerland, M. (2013). Knowledge Sharing in Professions: Working Creatively with Standards in Local Settings. I: Sannino, A, and Ellis (eds) *Learning and collective creativity. Activity-Theoretical and Sociocultural Studies.* New York: Routledge.

Markham, A. (2004). The Internet as research context. In: Seale, C., Gobo, G., Gubrium, J. F. & Silverman, D. Qualitative Research Practice. London: SAGE Publications Ltd

Mørch, A. I & Skaanes, M. A (2010). Design and Use of an Integrated Work and Learning System: Information Seeking as Critical Function. In Ludvigsen, S. Lund, A., Rasmussen, I. & Säljö, R. (Eds.). *Learning Across Sites: New Tools, Infrastructures and Practices*. London, UK: Routledge, pp. 138-155.

Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Oxford university press.

Norman, D. A. (2001): *The Design of Everyday Things*. London: The MIT Press

Novak, J. D. (2010). *Learning, creating, and using knowledge: Concept maps as facilitative tools in schools and corporations*. New York: Routledge.

Pritchard, A. and Woollard, J. (2010). *Psychology for the classroom: Constructivism and social learning*. Routlegde: London.

Raply, T. (2004). Interviews. In: Seale, C., Gobo, G., Gubrium J. F. & Silverman, D. *Qualitative Research Practice.* London: Sage Publications Ltd

Rheingold, H. (1993). *The virtual community: Homesteading on the electronic frontier*. MIT press.

Seale, C., Gobo, G., Gubrium, J. F. & Silverman, D. (2004). *Qualitative Research Practice*. London: SAGE Publications Ltd

Stahl, G., Koschmann, T., & Suthers, D. (2006). Computer-supported collaborative learning: An historical perspective. In Sawyer, R. K. (Ed.), *Cambridge Handbook of the Learning Sciences.* Cambridge, UK: Cambridge University Press.

Säljö, R. (2001). *Læring i praksis. Et sosiokulturelt perspektiv.* Oslo: Cappelen Akademiske Forlag.

Säljö, R. (2006). *Læring og kulturelle redskaper.* Oslo: Cappelen Akademiske Forlag.

Thagaard, T. (2013). *Systematikk og innlevelse: en innføring i kvalitativ metode.* Bergen: Fagbokforlaget

Vygotsky, L. S. (1978). Mind and society: The development of higher mental processes.

Wenger, E. (1999). *Communities of practice: Learning, meaning, and identity*. Cambridge university press.

Wenger, E., McDermott, R. A., & Snyder, W. (2002). *Cultivating communities of practice: A guide to managing knowledge*. Harvard Business Press.

Wertsch, J. V. (1985). *Vygotsky and the social formation of mind*. Harvard University Press.

Wertsch, J. V. (1998). *Mind as action.* Oxford: Oxford University Press

Journals

Bordia, P., Irmer, B. E., & Abusah, D. (2006). Differences in sharing knowledge interpersonally and via databases: The role of evaluation apprehension and perceived benefits. *European Journal of Work and Organizational Psychology*, *15*(3), 262-280.

Clark, H. H., & Brennan, S. E. (1991). Grounding in communication. *Perspectives on socially shared cognition*, *13*(1991), 127-149.

Fischer, G. (2013). A conceptual framework for computer-supported collaborative learning at work. In *Computer-Supported Collaborative Learning at the Workplace* (pp. 23-42). Springer US.

Greenhow, C., Robelia, B., & Hughes, J. E. (2009). Learning, teaching, and scholarship in a digital age web 2.0 and classroom research: what path should we take now?. *Educational researcher*, *38*(4), 246-259.

Grudin, J. (1994). Computer-supported cooperative work: History and focus. *Computer*, *27*(5), 19-26.

Halfaker, A., Keyes, O., & Taraborelli, D. (2013). Making peripheral participation legitimate: reader engagement experiments in Wikipedia. In *Proceedings of the 2013 conference on Computer supported cooperative work* (pp. 849-860). ACM.

Hermanrud, I. (2009). Professional networks and knowledge sharing: the role of ICT use: a comparative study. International Conference on Organizational Learning.

Hjelmervik, O. R., & Wang, K. (2007). ICT-supported knowledge representation for development of routines in industry. *Journal of Intelligent Manufacturing*, *18*(4), 479-485.

Hsieh, G., Hou, Y., Chen, I., & Truong, K. N. (2013, February). Welcome!: social and psychological predictors of volunteer socializers in online communities. In *Proceedings of the 2013 conference on Computer supported cooperative work* (pp. 827-838). ACM.

Opdenakker, R. (2006). Advantages and Disadvantages of Four Interview Techniques in Qualitative Research. In Forum Qualitative Sozialforschung/Forum: Qualitative Social Research (Vol. 7, No. 4).

Scardamalia, M., & Bereiter, C. (2006). *Knowledge building: Theory, pedagogy, and technology* (pp. 97-115). na.

Stahl, G. (2013a). Interaction analysis of a biology chat. In *Productive multivocality in the analysis of group interactions* (pp. 511-539). Springer US.

Stahl, G. (2013b). Theories of collaborative cognition: Foundations for CSCL and CSCW together. In *Computer-Supported Collaborative Learning at the Workplace* (pp. 43-63). Springer US.

Internet references

Camtasia. (2015). Collected 20.april 2015, from TechSmith https://www.techsmith.com/camtasia.html

Second Life. (2015). Collected 12.may 2015, from Second life http://secondlife.com

Skype. (2015). Collected 20.april 2015, from Skype http://www.skype.com/no/

Webex. (2015). Collected 20.april 2015 from Webex http://www.webex.com

Appendix

Appendix 1

Receipt from the Norwegian Social Science Data Services:

Norsk samfunnsvitenskapelig datatjeneste AS
NORWEGIAN SOCIAL SCIENCE DATA SERVICES

NSD

Harald Hårfagres gate 29
N-5007 Bergen
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Org.nr. 985 321 884

Anders Mørch
Institutt for pedagogikk Universitetet i Oslo
Postboks 1092 Blindern
0317 OSLO

Vår dato: 17.03.2015 Vår ref: 42228 / 3 / IB Deres dato: Deres ref:

TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 12.02.2015. Meldingen gjelder prosjektet:

42228	*Collaborative Learning and Knowledge Sharing with the use of a digital tool in a Global Company*
Behandlingsansvarlig	*Universitetet i Oslo, ved institusjonens øverste leder*
Daglig ansvarlig	*Anders Mørch*
Student	*Ida Helsing*

Personvernombudet har vurdert prosjektet og finner at behandlingen av personopplysninger er meldepliktig i henhold til personopplysningsloven § 31. Behandlingen tilfredsstiller kravene i personopplysningsloven.

Personvernombudets vurdering forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, ombudets kommentarer samt personopplysningsloven og helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.

Det gjøres oppmerksom på at det skal gis ny melding dersom behandlingen endres i forhold til de opplysninger som ligger til grunn for personvernombudets vurdering. Endringsmeldinger gis via et eget skjema, http://www.nsd.uib.no/personvern/meldeplikt/skjema.html. Det skal også gis melding etter tre år dersom prosjektet fortsatt pågår. Meldinger skal skje skriftlig til ombudet.

Personvernombudet har lagt ut opplysninger om prosjektet i en offentlig database, http://pvo.nsd.no/prosjekt.

Personvernombudet vil ved prosjektets avslutning, 01.06.2015, rette en henvendelse angående status for behandlingen av personopplysninger.

Vennlig hilsen

Katrine Utaaker Segadal

Inga Brautaset

Kontaktperson: Inga Brautaset tlf: 55 58 26 35

Dokumentet er elektronisk produsert og godkjent ved NSDs rutiner for elektronisk godkjenning.

Avdelingskontorer / *District Offices*:
OSLO: NSD. Universitetet i Oslo, Postboks 1055 Blindern, 0316 Oslo. Tel: +47-22 85 52 11. nsd@uio.no
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TROMSØ: NSD. SVF, Universitetet i Tromsø, 9037 Tromsø. Tel: +47-77 64 43 36. nsdmaa@sv.uit.no

Appendix 2

The information and consent letter, sent out to all informants who where asked to participate:

Request to participate in a research project

"Collaborative Learning and Knowledge Sharing with the use of a digital tool in a Global Company"

Information about the data collection

The purpose of this project is to study the use of the network tool "The Edge", and how it can foster collaborative learning and knowledge sharing in a department in the Company. The problem framing of the project is "How is the Edge as a tool used to achieve knowledge sharing and collaborative learning in a department in the Company?" The project is in conjunction with my Master Degree from the University in Oslo, and my Master thesis.

The study will be conducted in the network of the department SDS in the Company. You are receiving a request to participate because of your activity in the networks discussion forum.

Participation in the study

Participation in the study implies that your activity in the network can be used in the analysis part of my thesis, and that we carry out an interview. The interview will last for around 30 minutes and will be taped. Personal information about you will not be used in the thesis, or in any other situations. Name, contact info and other personal details will be made anonymous.

What happens with your information after the study?

All of your information will be kept confidentially. It will only be available for the student and the supervisor. Everything will be stored in a computer, locked with username and password. It is not an intention to use full names or recognizable information of you, not in the thesis or in other purposes.

The project has an end date 1.6.2015. All records and personal data will be deleted by this time.

Voluntary participation

Participation in this project is voluntary, and you may at any point withdraw your consent, with no need to specify any reason. If this happens, I need to be informed, and all information about you will be made anonymous.

The project is reported to *NSD, Personvernombudet for forsking (http://www.nsd.uib.no/personvern/),* which is securing that the project is within the law about protection of personal privacy.

If you have any further questions or comments, do not hesitate to contact me Ida Helsing (+47 XXXXXXXX), or the supervisor Anders Mørch (+47 XXXXXXXX)

Regards,
Ida Helsing

Consent to participation in the study

I have read the information enclosed and I´m willing to participate in the project

……..
Place and date

……..
Signature

Appendix 3

The interview guide that where used in the interview with the four informants:

INTERVIEW GUIDE FOR USERS

1. **Introduction**
   - Presentation of myself and of my project
   - The aim with the interview
   - Agreement for participation
   - Permission to use sound recorder

2. **Could you introduce yourself?**
   - How long have you been working in the Company?
   - What is your occupation?
   - Have you had other positions?
   - What are you responsibilities?

3. **Background information about The Edge**
   - How long have you been a part of a network in The Edge?
   - How often are you using The Edge?
   - What do you know about the visions of The Edge?
   - Why are you using The Edge?
   - Is it expected from you, and your work tasks to use The Edge?

4. **Knowledge sharing and collaborative learning**
   - What do you know about Knowledge Management?
   - What do you associate with knowledge sharing?
   - Does knowledge sharing exist in the Company, and how?
   - Is this important in the Company?
   - Is it expected from you to actively share your knowledge?
   - How do you prefer to find knowledge and share knowledge?
   - Collaborative learning, is this something that exists? And how?

- Would you call knowledge sharing and collaborative learning a part of your primary or secondary work?
- Are you experiencing any challenges regarding cultural differences and knowledge sharing and/or collaborative learning?

5. The usage of The Edge

- How are you using the discussion site?
- How would knowledge sharing been without The Edge?
- What is the advantage with The Edge as a tool for knowledge sharing and collaborative learning? How?
- What is your motivation to use The Edge?
- Are you using The Edge as a part of your primary or secondary work?
- Regards to cultural differences, which effect does this have on the activity?
- Do you have any thoughts on how to share knowledge in a better way? With e.g. another tool?
- Do you have any thoughts on how to foster collaborative learning in a better way? With e.g. another tool?
- Do you see any limitations regarding knowledge sharing or collaborative learning with The Edge?
- Can you think of something that complicates the use of The Edge as a tool?
- Is there any room for improvements? How?